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LEE J. GARY

722 FIRST NATIONAL BANK BUILDING

CHICAGO 3

US EPA RECORDS CENTER REGION 5



470293

TELEPHONE CENTRAL 8123
CABLE ADDRESS "FRANBEL"

FRANK L. BELKNAP-1933
LEE J. GARY
W. F. DESMOND
J. M. PARKER
C. H. BASSETT
J. T. CULLINAN

March 15, 1948.

Frost Company,
Kenosha,
Wisconsin.

Attention: Mr. Frost:

Dear Sir:

In compliance with your request we have made a novelty investigation of the drain structure shown in your blue print 272-1A, and we call the following enclosed patents to your attention:

1,193,145	2,059,120
1,271,003	2,268,819
1,394,862	2,271,837

You are familiar with the Fredrickson et al., patent No. 2,271,837 upon which we are writing you of even date. This patent is pertinent only that it shows a sliding connection between the rod 32 and the eyelet which is carried at the lower portion of the member 25. The patentee in Claim 3 refers to this connection as a telescopical connection. The lifting mechanism for the valve comprises essentially a simple eccentric.

The patent to Groeniger, No. 2,268,819 illustrates a valve lifting mechanism comprising a lever arm 40 secured to the actuating handle. The patent to Kreuzer et al., No. 2,059,120 shows a simple eccentric for lifting the valve. The patent to Ball, No. 1,271,003 is drawn from a non-analogous art and is not believed to be pertinent.

The patent to Hinsdale No. 1,193,145, in our opinion, completely anticipates that aspect of your invention wherein you employ a telescopic engagement between the lifting rod and the valve. Your attention is directed to Fig. 1 of the drawing wherein the rod 12 telescopically engages a sleeve 13 to provide an adjustment for different distances between the drain opening and the overflow pipe.

Frost Company

- 2 -

Your attention is also directed to the patent to Reno, No. 1,394,862 which, in our opinion, is the closest construction to your valve lifting mechanism. In the Reno patent a mechanism is shown which comprises a rotating handle 17 which is connected to a disk 20. A pin 21 is carried by the disk 20 at an eccentric position whereby rotation of the handle 17 rotates the pin 21 into contact with the end of lever 11 and thereby rocks the lever 11. This device is directed to a flush valve and is the only patent which shows a rockable member for actuating the valve.

However, we believe that your structure is fundamentally different from this construction in that the lever which raises and lowers the connecting link to the valve rocks in a direction at right angles to the eccentric pin which actuates said lever. In the Reno construction the arm 11 rocks in a plane parallel to the plane in which the eccentric pin 21 moves. Accordingly, we believe that there is a possibility of obtaining patent protection upon your valve lifting mechanism. Of course, we feel that the Hinsdale patent completely anticipates the other inventive aspects of your device.

After you have had an opportunity to examine the enclosed patents, will you kindly advise whether you wish us to prepare a patent application upon your valve lifting mechanism.

Very truly yours,



WFD/A
encs

1.193.145

Telescopic engagement Hensdale

1.193.145
Hensdale
Telescopic engagement

1,193,145.

Fig. 7.

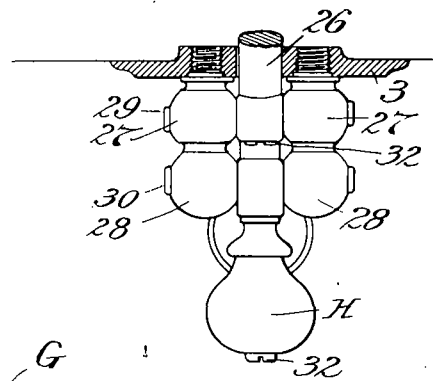
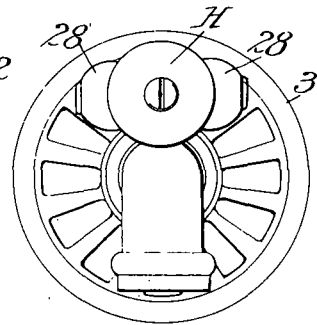


Fig. 3.

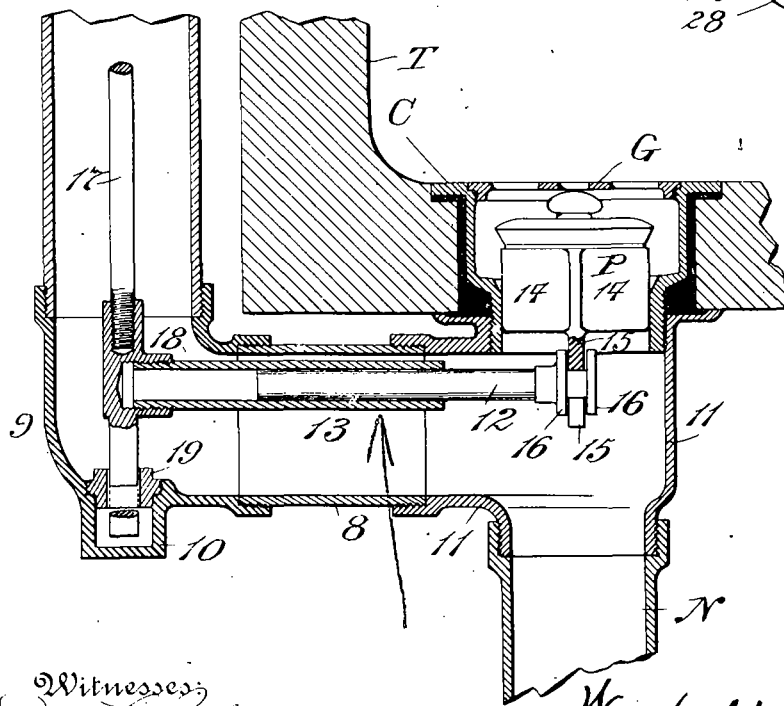
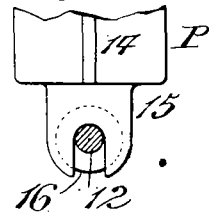


Fig. 4



Inventor
Winfield E. Hinsdale
By Attorney
Charles J. Kintner

UNITED STATES PATENT OFFICE.

WINFIELD E. HINSDALE, OF NEW YORK, N. Y.

BATH-TUB FIXTURE OR APPLIANCE.

1,193,145.

Specification of Letters Patent.

Patented Aug. 1, 1916.

Application filed September 13, 1911. Serial No. 649,123.

To all whom it may concern:

Be it known that I, WINFIELD E. HINSDALE, a citizen of the United States, and resident of New York, borough of Manhattan, county and State of New York, have made a new and useful Invention in Bath-Tub Fixtures or Appliances, of which the following is a specification.

My invention is directed particularly to fixtures or appliances adapted to be utilized in connection with bath tubs for the filling of the same and the withdrawal of the water therefrom after use, and it has for its objects, first to provide fixtures or appliances of this nature which will be so located and arranged with relation to the tub that the best sanitary effects result therefrom. Second, to provide fixtures or appliances of this nature which will be permanently located with relation to the tub and so constructed and arranged that all parts thereof may be readily reached for repairs, or for the purpose of cleaning, and that under no possible condition of usage can the outlet or discharge of the water, after use, be prevented, when it is desired to empty the tub. Third, to so construct and arrange certain of the parts directly beneath the bottom of the tub in such manner that in the event of the admission of any foreign or extraneous matter into the outlet pipe or tube or the trap therefor it may be readily removed through the tub outlet and without disarranging or disconnecting any of the permanent parts of the fixture. Fourth, to so interconnect all of the operative and control parts of devices of this nature that a ready adjustment may be effected in the event of perfect adjustment being required for the more perfect operation of such parts, and to so locate the mouth of the inlet nozzle that when the plug and outlet grate are removed the full force of the clean water emitted by the inlet nozzle may be allowed to act directly downward into the trap or outlet pipe, thereby affording the best possible means for effectually flushing or cleaning out the same. Fifth, to provide novel means for effectually connecting the overflow stand-pipe or tube and the outlet casting or chamber respectively to the end and bottom of a bath tub and so interrelated that these parts when secured in place become in effect a fixture

permanently secured to the tub, and to combine therewith a detachable face fitting adapted to support the operating and control means for the outlet plug.

For a full and clear understanding of the invention, such as will enable others skilled in the art to construct and use the same, reference is had to the accompanying drawings, in which,

Figure 1 is a vertical sectional view taken through one end of a bath tub and illustrating my improvements as applied thereto. Fig. 2 is a detail end elevational view as seen looking at Fig. 1 from right to left near the top of the drawing. Fig. 3 is a detail sectional view taken through Fig. 2, the exposed operative parts being shown in plan view. Fig. 4 is a detail view of the operative parts connected immediately with the plug or stopper for lifting the same from below.

Referring now to the drawings in detail in all of which like letters and numerals represent like or equivalent parts wherever used, T represents a bath tub, 1 a vertically disposed stand-pipe or overflow tube, and 2 the usual overflow casting to which such stand-pipe is secured in the usual way by a screw-threaded face fitting.

4 represents an inlet pipe made preferably in two sections, the vertical one having a curved neck at its lower end to which the horizontal one is secured by screw-threads, as shown. This inlet pipe 4 is secured to the overflow casting 2 by a screw-threaded part 5 and a hollow set-nut 6, the usual packing being provided between the two for effecting a water tight connection. The outer end of the horizontal section of the pipe 4 passes loosely through a central opening in the perforated face fitting 3 and to this there is secured the usual inlet nozzle 7, said parts being screw-threaded as clearly shown, for the purpose of effecting the necessary adjustment and perfect union thereof. The lower end of the stand-pipe or overflow tube 1 is secured to a tubular elbow 9 provided at its lower end with a water cup or chamber 10, the function of which will be described later on. To this elbow is connected a horizontal pipe 8 which in turn is attached to an additional outlet casting or tube 11, which serves as an outlet for both the overflow and the water contained in the tub. The lower end

of this tube is connected by screw-threads directly to the upper end of the trap N and the upper end of which rests against the bottom of the tub and is securely held in

5 such position by the lower screw threaded end of an outlet casting C located in the bottom of the bath tub T. In the enlarged upper end of this outlet casting C is secured by screw-threads a grating G, the upper
10 faces of which parts are carefully dressed so that they shall be quite as smooth as the bottom of the tub itself and flush therewith. P is a plug or stopper located in the enlarged chamber of the casting C and adapted
15 to be accurately seated when the tub is being filled. By locating the plug in the enlarged chamber of the outlet casting C and wholly below the grating G I prevent any possibility of injury to the user by slipping or
20 in any way coming into contact with the plug P while in the tub. This plug P is provided at its lower end with four radially disposed guiding surfaces 14, 14, 14 the outer curvilinear edges of which fit the accurately turned inner face of the diminished
25 portion of the casting C at its lower end. Said plug is provided at its upper end with a knob for manually lifting it from its seat.

15 is a downwardly extending lifting neck
30 centrally located with relation to the plug and forked at its lower end, as clearly shown in Fig. 4 of the drawings.

12 is a horizontally disposed valve operating rod provided at one end with two integral disks 16, 16, adapted to act as guides
35 for the forked part of the downwardly extending neck 15, the other end of said rod being adapted to telescope in a horizontally disposed tube 13, which is a continuation of
40 the overflow tube 1 and in turn is screw-threaded into one end of an angle casting 18, the lower end of which is accurately turned and adapted to move vertically in an opening through a sleeve 19 screw-threaded
45 into the upper end of the water cup or chamber 10. To the upper end of the angle casting 18 is adjustably secured a vertically disposed valve control or operating rod 17 passing axially through the stand-pipe 1,
50 and to the upper end of this rod 17 is adjustably secured a yoke 20, the arms 21 of which are provided with eyes 24, 24, and back-stop, as shown.

22 is a plug or stopper control lever having forked arms 23, 23, the ends of which
55 extend through the eyes 24, 24; 25, 25 being cotter pins for securing the parts together. This operating lever 22 is sleeved in one end of an arm 26.

60 27—28, 27—28 represent pairs of journal bearings bored parallel through pins screw-threaded each at one end and adapted to be secured directly in corresponding screw-threads in the face-fitting 3, as clearly illustrated in Fig. 3 of the drawings.

29—30 represent journal pins adapted to be journaled in the journal bearings 27—28.

31 represents a screw for securing the lever 22 and arm 26 together and to its journal pin 29.

H represents the operating handle and 32
70 a screw for securing the same directly to the journal pin 30.

33 represents an eccentric secured to the operating handle H and having a sliding
75 bearing surface upon an extension 34 of the arm 26.

It is to be understood that when the parts are assembled, as shown in Fig. 1, the stand-pipe or overflow tube 1, the overflow casting
80 2, tubular elbow 9, horizontal pipe 8, additional outlet casting or tube 11, and trap N are permanently secured in position by the plumber, in the wall and floor of the building, and that when the bath tub is in the
85 position shown it is connected with the overflow casting 2 by the face-fitting 3, and to the additional outlet casting 11 by the bottom outlet casting C, said parts being screw-threaded as clearly shown and the necessary cement being utilized both at the
90 overflow and outlet. The vertical and horizontal operating rods 12, 13 and 17 having been secured in position and properly adjusted the lever 22 is attached and the necessary
95 operating parts connected therewith securely together. The plug P is then dropped into its position in the lower end of the outlet casting C and the grating G
100 screwed into position. The horizontal portion of the inlet pipe 4 is then secured by inserting it through the opening in the center of the face fitting 3 and the inlet nozzle
105 7 is secured thereto, it being noted that by reason of the adjustability of parts the mouth of this nozzle may be located directly over the axial center of the trap N, so that when the grating G and plug P are removed and the rod 12 forced inward into the horizontally
110 disposed tube 13 there is an absolutely free and unobstructed flow of clean water under pressure into the trap. Under such conditions also it is apparent that anyone may readily utilize implements for removing any substance which may choke up
115 the trap, thereby making it possible to avoid any chance of the trap becoming inoperative. It is also obvious that by reason of the relation of the parts disclosed there is no possibility that any water can in any way
120 render the operative parts offensive to such an extent that they may need cleaning other than at relatively long terms, and also that none of the water contained in the tub ever has any contact with any of the outlet passages, as is frequently the case where the
125 stand pipes are detachably secured in the outlet or any other existing types of bath tub fixtures, this feature being of great importance in that it maintains all of those
130

parts with which a person may come in contact absolutely free from objectionable matter.

In the operation of the plug operating and control appliances it is apparent that when the operating handle H is moved from its upper position to the lower position shown in Fig. 1, the operating control rods 17, 13 and 12 are lifted and that hence the plug P is lifted into the position shown. It will also be apparent that when a reverse movement takes place the eccentric 33 will cause these parts to be lifted and that as they are lifted water will pass through the sleeve 19 into the water cup or chamber 10; these parts constituting in effect a dash-pot arrangement by which the best operative results are brought about, such an action having a cleansing effect in the water cup or chamber.

In the drawings those parts of the fixture exterior to the tub may be and preferably are buried in the walls of a building during construction, obviously these parts might be attached in the manner shown directly to the bath tub and the inlet pipe 4 and outlet casting 11 in connection therewith left in exposed position within the room, these means being well within the skill of those versed in the art.

I do not limit my invention to the especial details of construction shown in the accompanying drawings, as a number of the features thereof might be materially departed from and still come within the scope of my claims hereinafter made, the essence of my invention lying in the adaptability of the operative parts for the inlet and outlet of water in a bath tub in such manner as to accomplish the very desirable objects hereinbefore referred to. Nor do I limit my invention to use with bath tubs, as obviously

the same may be utilized in connection with various types of vessels receiving water from a permanent source of supply and discharging the same after use into a sewer or out of a building through a trap or otherwise, such, for instance, as in basins, wash-tubs, sinks or vats—of the stationary type—used in houses, laboratories or buildings generally, and my claims are, therefore, designed to be of such scope as to include such generic uses.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is—

1. A bath tub fixture embracing interconnected outlet and overflow tubes, a waste-plug seated in the bottom of the tub, and an outlet or opening therefor located directly above the trap; in combination with interconnected means located in the overflow tube for operating the plug, said means at its lower end being located directly beneath the plug and adapted to move one side of the same so that free access to the trap may be had, substantially as described.

2. A bath tub fixture embracing a valve or plug seated in the bottom of the tub and in vertical alinement with the trap; a plurality of operating rods for said valve all located in the overflow tube, two of said rods being telescopic and located below the valve or plug and detachable therefrom, and a third rod vertically disposed and connected at its top with means for operating it, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WINFIELD E. HINSDALE.

Witnesses:

C. J. KINTNER,
M. F. KEATING.

1.271.003

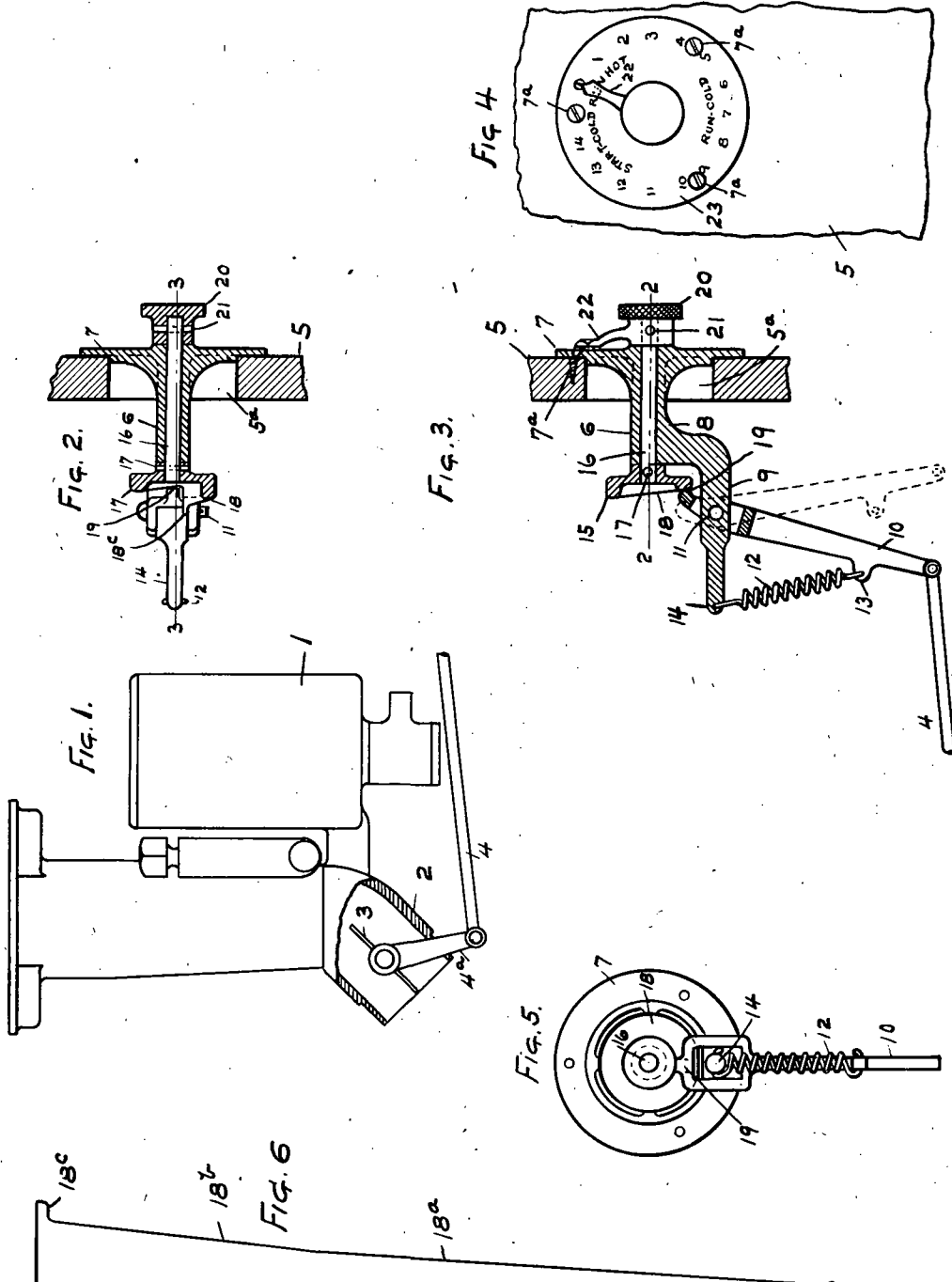
Ball

Has cam instead of
eccentric pin for rocking
arm 10

F. O. BALL.
DASHBOARD CONTROLLING MECHANISM FOR CARBURETERS.
APPLICATION FILED JAN. 8, 1917.

1,271,003.

Patented July 2, 1918.



Inventor
Frederick O. Ball
J. V. C. Lord.
Attorney

UNITED STATES PATENT OFFICE.

FREDERICK O. BALL, OF DETROIT, MICHIGAN, ASSIGNOR TO BALL AND BALL CARBURETOR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

DASHBOARD CONTROLLING MECHANISM FOR CARBURETERS.

1,271,003.

Specification of Letters Patent.

Patented July 2, 1918.

Application filed January 8, 1917. Serial No. 141,232.

To all whom it may concern:

Be it known that I, FREDERICK O. BALL, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in a Dashboard Controlling Mechanism for Carbureters, of which the following is a specification.

This invention relates to dash-board controlling mechanisms for carbureters and consists in certain improvements in the construction thereof as will be hereinafter fully described and pointed out in the claims.

It is usual in automobiles to have a mechanism mounted on the dash-board by means of which the quality of the mixture supplied by the carbureter may be controlled. Such control is necessary to adjust the carbureter for ordinary running but more particularly is necessary with relation to differences in temperature in the fuel being used and also differences in temperature in the engine, as for instance, in starting. The usual controlling mechanism consists of a push and pull button with a yielding detent for holding the button in different adjustments. The difficulty with such a device is that the movement is nearly in the line of vision so that accuracy of adjustment is difficult and further the amount of movement that can be conveniently accomplished is slight so that a nice graduation of the movement cannot be conveniently accomplished. The object of the present invention is to provide a mechanism which may be substituted for the ordinary push and pull button and obviate the difficulties incident to the use of such a button.

The invention is illustrated in the accompanying drawings as follows:—

Figure 1 shows an outline of a carbureter.

Fig. 2 a section on the line 2—2 in Fig. 3.

Fig. 3 a section on the line 3—3 in Fig. 2.

Fig. 4 a face view of the dial and operating button.

Fig. 5 a rear view of the control actuating device.

Fig. 6 a development of the cam forming a part of said device.

1 marks the carbureter, 2 the intake of the carbureter, 3 a choke valve in the intake, 4 a rock lever for actuating the choke valve and 5 the dash. This is provided with an opening 5^a. This may be the usual opening used with the push and pull button.

The mounting 6 has a plate 7 which bridges and closes the opening 5^a. Extending inwardly from the plate is a bearing post 8 with an extension 9. A lever 10 is pivotally mounted on the extension 9 by means of a pin 11. A spring 12 extends from a lug 13 on the lever 10 to a projection 14 on the extension 9 and tends to hold the lever in a forward position. The rod 4 is secured to the end of the lever 10, the rod 4 extending to the carbureter and having a forward and back movement in actuating the choke valve.

A cam 15 is mounted on a shaft 16. It is locked with the shaft by a pin 17. The cam 15 has a cam face 18 which operates against the end 19 of the lever 10.

The cam face 18 is developed in Fig. 6. Through a large portion of the throw of the cam the pitch is very slight so that a very nice adjustment of the position of the choke valve 3 may be made through the action of the cam. This slight pitch is indicated in the initial throw of the cam at 18^a in Fig. 6. In starting the cold motor it is desirable to operate the choke valve to a much greater extent than would be desirable for ordinary running. To get this greater movement of the valve the pitch of the cam is increased during the latter part of its throw as at 18^b (Fig. 6). A stop 18^c is provided in the end of the cam. This stop engaging the end 19 limits the movement.

The shaft 16 extends through the bearing post 8 and a knurled operating button 20 is secured to the shaft by means of a pin 21. A finger 22 extends from the button 20 and travels over a dial 23 formed on the face of the plate 7. The dial has the different graduations marked upon it.

In operation the button 20 is grasped and turned. This rotates the cam 15 which in turn swings the lever 10 and this actuates the choke valve 3 through the linkage hereinbefore described. As the button 20 is turned the pointer or finger 22 is carried over the dial and inasmuch as this direction of travel is crosswise of the mounting and crosswise of the dash it is readily visible to the operator so that a nice adjustment may be had and this adjustment may be repeated without difficulty. Furthermore the travel of the cam as indicated by the pointer being practically a complete turn of the button is much greater than would be

ordinarily practical with a push and pull button so that a nice adjustment may be readily accomplished. The pitch of the cam is so slight that the frictional engagement of the cam with the lever will lock at any point of adjustment without a positive locking device.

The carrier is so formed that it can be readily inserted through the opening in the dash which is bridged by the plate 7, this being preferably such that the mounting may be readily substituted for the push and pull button without alteration of the dash if desired. It is difficult to get at the dash from the front side and, therefore, by forming the mounting such that it may be attached to the face of the dash as by the screws 7^a it may be conveniently attached.

What I claim as new is:—

1. In a dash-board controlling mechanism for carbureters, the combination of a dash-board mounting; a carbureter control actuating means having a forward and back movement; and devices carried by the mounting and actuating said means, said devices having a movement in a direction crosswise of the mounting and in the same general plane as the dash with the mounting in place, whereby the movement of the devices is across the line of vision of an operator and converting this movement to give the forward and back movement of the means.

2. In a dash-board controlling mechanism for carbureters, the combination of a dash-board mounting; a carbureter control actuating means having a forward and back movement; and devices carried by the mounting, said devices having a rotative movement on an axis extending from front to rear of said mounting, whereby the movement of said devices is across the line of vision of an operator and this movement is converted to give the forward and back movement to the means.

3. In a dash-board controlling mechanism for carbureters, the combination with a carbureter control actuating means; a dash-board mounting; and devices carried by the mounting and actuating said means,

said devices having their operative movement in a direction crosswise of the mounting, and said devices comprising mechanism for varying the controlling action of the means with a given movement of the device in different parts of the movement of the device.

4. In a dash-board controlling mechanism for carbureters, the combination with a carbureter control actuating means; a dash-board mounting; and a cam carried by the mounting and actuating said means, said cam having a cam face of varying pitch.

5. In a dash-board controlling mechanism for carbureters, the combination with a carbureter control actuating means; a dash-board mounting having a shaft extending lengthwise therethrough; a cam on said shaft; a lever actuated by the cam, said lever actuating said means; a spring for returning the lever; an operative button for operating the shaft; a dial; and a pointer on the button operating over the dial.

6. In a dash-board controlling mechanism for carbureters, the combination of a carbureter control actuating means; a dash-board mounting adapted to bridge an opening in a dash-board; and devices carried by the mounting and actuating said means, said devices having their operative movement in a direction crosswise of the mounting and being adapted to operate through the dash-board opening bridged by the mounting.

7. In a dash-board controlling mechanism for carbureters, the combination with a carbureter control actuating means; a dash-board mounting comprising a dial adapted to bridge an opening in a dash-board; and devices carried by the mounting and actuating said means, said devices rotating on an axis lengthwise of the mounting and comprising means for indicating the movement of the devices over the dial, said devices being adapted to operate through the dash-board opening bridged by the mounting.

In testimony whereof I have hereunto set my hand.

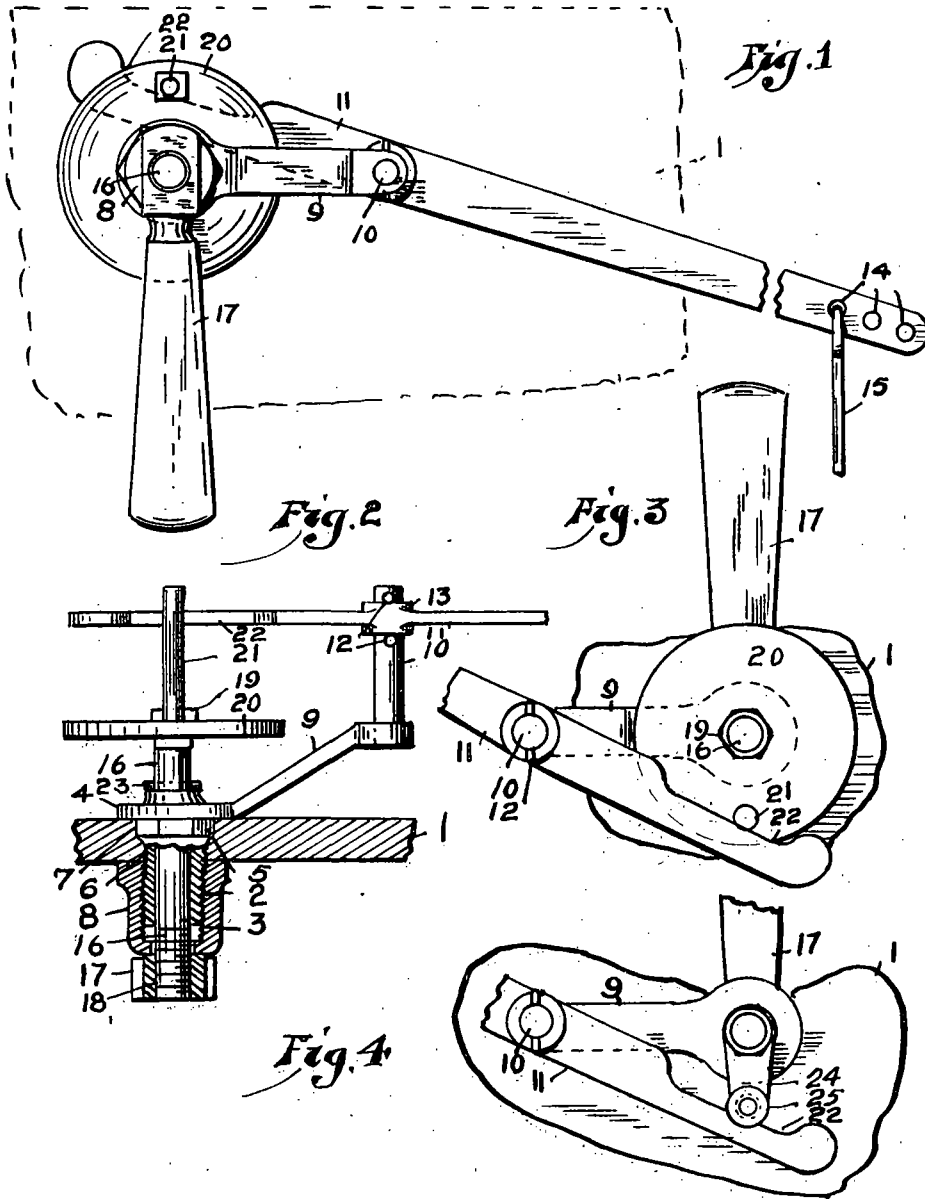
FREDERICK O. BALL.

Arm 11 rocked
by eccentric pin 21 but
rocks arm in plane
of rotation of actuating handle

M. C. RENO.
LIFT FOR FLUSH VALVES.
APPLICATION FILED FEB. 3, 1920.

1,394,862.

Patented Oct. 25, 1921.



Witness
R. E. Dilworth

Inventor
Milton C. Reno.
By Jas. R. Smyth
Attorney

UNITED STATES PATENT OFFICE.

MILTON C. RENO, OF CORLISS, PENNSYLVANIA.

LIFT FOR FLUSH-VALVES.

1,394,862.

Specification of Letters Patent.

Patented Oct. 25, 1921.

Application filed February 3, 1920. Serial No. 355,911.

To all whom it may concern:

Be it known that I, MILTON C. RENO, a citizen of the United States, residing at Corliss, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Lifts for Flush-Valves, of which the following is a specification.

This invention relates to new and useful improvements in flushing devices for water closet tanks, and more particularly to the lift mechanism for actuating the flush valve to permit the flushing action to take place by discharging the water from said tank.

The primary object of the invention is to provide a device of the character stated, in a manner as hereinafter set forth, which is weight controlled and operated and which will automatically assure the dropping of the lift lever after the flushing operation, thereby permitting the closing of the flush valve which is often rendered inoperable by the improper functioning of the lift mechanism.

Further objects of the invention are to provide a device of the class described, which is simple in its construction and arrangement, strong, durable and efficient in its use, readily installed, and inexpensive to manufacture.

To the accomplishment of these and such other objects as may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts hereinafter specifically described and illustrated in the accompanying drawing wherein is shown an embodiment of the invention, but it is to be understood that the device shown is merely illustrative and that various changes in the form, proportion and minor details of construction may be resorted to, without departing from the principle or sacrificing any of the advantages of the invention, which come within the scope of the claims hereunto appended.

In the drawing forming a portion of this specification and wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a side elevation of the lift mechanism for flush valves in accordance with this invention.

Fig. 2 is a top plan view thereof with portions shown in section and with portions broken away.

Fig. 3 is an inverted side view of the device with portions broken away.

Fig. 4 is a similar view of a modified form.

Referring in detail to the drawing there is shown a lift mechanism for flush valves adapted to be attached to the side of a water-closet flush tank 1. The device comprises a sleeve 2 having its forward end threaded exteriorly, as at 3. Adjacent the rear end of the sleeve 2 is an integrally formed shoulder 4 which is provided with a squared forwardly projecting outer face 5. The sleeve 2 is mounted in the aperture 6 in the side wall of the flush tank 1, and to prevent the turning of the sleeve 2 in the aperture 6, the inner portion of the latter is formed with a squared recess 7 in which the squared forwardly projecting outer face 5 on the shoulder 4 is adapted to seat. The sleeve 2 is secured in the side wall of the tank 1 by means of the nut 8, which engages the threaded forward end of the said sleeve, in connection with the shoulder 4 which abuts against the inner face of the tank 1 when the nut 8 is tightened.

The sleeve 2 is further provided with a rearwardly inclined angularly disposed bracket 9 which is formed integral with the shoulder 4. Fixed to the outer end of the bracket 9, and extending rearwardly and at right angles with respect thereto, is the lift lever shaft 10.

A lift lever 11 is tiltably mounted on the shaft 10, and is prevented from moving laterally thereon by the pins 12, one of which is positioned on either side of the bearing hub 13, of the tilt lever 11, and fixed in the shaft 10. The outer end of the tilt lever 11 is provided with a series of apertures 14 in any of which the operating rod 15 may be pivotally and adjustably connected. The lower end of the operating rod 15 is adapted to connect with the flush valve, and the vertical movement of the former adapted to actuate the flush valve.

Rotatably mounted in the sleeve 2 is the operating shaft 16, the forward end of which carries the operating handle 17 threadably connected thereto, as at 18, or fixed thereto in any other suitable manner. Fixed to the rear end of the operating shaft 16, by means of the nut 19, is the disk 20. Securely mounted in the disk 20, adjacent its periphery, is a rearwardly extending actuating pin 21, the rear end of which is

adapted to engage the recessed portion 22, of the lift lever 11, and tilt the latter to vertically lift the operating rod 15 to actuate the flush valve. To prevent the shaft 16 from shifting longitudinally in the sleeve 2, a transversely extending pin 23 through the shaft, abuts against the rear end of the sleeve 2.

The handle 17 is designed to be made from heavy material or to be weighted so that the same will normally dispose itself in the pending position unless actuated to operate the flush valve. The actuating pin 21 is so positioned on the disk 20 with respect to the handle 17, that when the latter is in the depending, downward, or inoperative position the former will be at the extreme upward position, and vice versa.

The shafts 10 and 16 are preferably positioned in parallel horizontal alinement with respect to each other, and the recess 22 in the lifting lever 11 provided to give proper tilting movement to the latter.

In the modified form shown in Fig. 4, of the drawing, instead of using the disk 20 on the rear end of the shaft, an arm 24 is used for carrying the actuating pin, which latter in the modified form is provided with a roller 25. Otherwise the construction and operation of the modified form is identical to the preferred form thereof.

When operating the flush valve in a water

closet tank with a lift mechanism of my improved construction it will only be necessary to partially or entirely rotate the handle 17, which, after the flushing operation will invariably return to the normal or depending position, and permit the lift lever 11 to tilt to the inoperative position.

What I claim is:

A lift for the purpose set forth comprising a sleeve adapted to be extended through the wall of a flushing tank and provided on its inner end with a shoulder and its outer portion with peripheral threads and a squared portion between the threads and the shoulder, a shaft extending through the sleeve, a nut on the shaft, a nut inclosing the threaded portion of the sleeve and co-acting with the nut on the shaft to secure the sleeve to the wall, a pin carrying member on the inner end of the shaft, an elongated pin extended from said member, a bracket integral with said shoulder and extended inwardly, a shaft secured to the bracket, a lift lever extending in the same plane throughout and pivoted on the shaft secured to the bracket and having its top edge depressed to provide a recess in which said pin operates to tilt the lever, and a weighted handle on the outer end of said shaft.

In testimony whereof I affix my signature.

MILTON C. RENO.

2.059,120

Kreuzer

Lifting arm does not rock

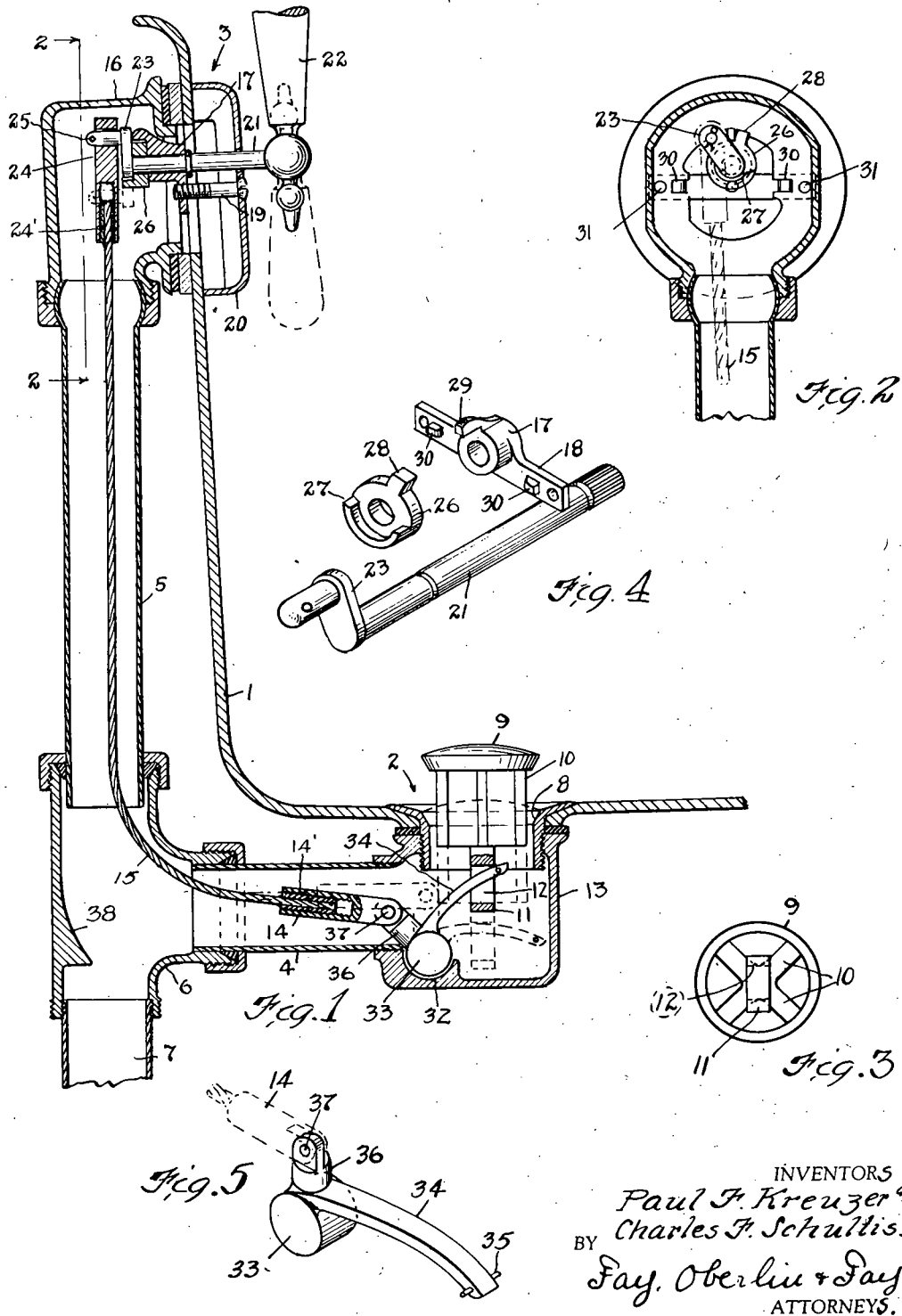
Oct. 27, 1936.

P. F. KREUZER ET AL

2,059,120

VALVE

Filed Oct. 1, 1934



UNITED STATES PATENT OFFICE

2,059,120

VALVE

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Application October 1, 1934, Serial No. 746,348

9 Claims. (Cl. 4—199)

This invention relates to an improvement in drain valves for bath-tubs and the like of the type disclosed in Patent No. 1,943,628 which issued to Charles F. Schultis, one of the co-inventors of this present invention, and has specific reference to means whereby the outlet valve is lifted from its seat vertically and means whereby said valve is held in open position by a manipulation of the operating handle in either direction. We have secured said desired results with a minimum obstruction to the effective cross area of the conduits connecting the drain, and the overflow, to the main outfall conduit, and provide an installation which may be removed for inspection or repair through the outlet orifice without disturbing any part of the permanent installation. Other objects and advantages of our invention will appear from the description of the means employed and of the manner of operating same.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

Certain mechanism embodying our invention is set forth in the annexed drawing and the following description, which disclosed means however, constitute but one of the mechanical forms in which the principle of our invention may be used.

In the annexed drawing:

Fig. 1 is a sectional view of the apparatus comprising our invention shown associated with a fragmentary section of a bath tub; Fig. 2 is a sectional view of the manipulating portion of our invention shown in Fig. 1 taken on a plane substantially indicated by the line 2—2 therein; Fig. 3 is a cross-sectional view of the outlet valve taken on a plane substantially indicated by the line 3—3 in Fig. 1; Fig. 4 is a view of the manipulating shaft and its associated parts dis-assembled; Fig. 5 is a view of the lever member by which the outlet valve is operated.

Referring to said drawing, and specifically to Fig. 1, the apparatus comprising our invention is shown associated with a bathtub, a portion of which is diagrammatically shown at 1. Obviously, the apparatus may be similarly used with any other container having overflow and drain openings. The drain orifice of the bathtub 1 is indicated generally at 2 and the overflow orifice is indicated generally at 3. The drain orifice 2 has an outfall conduit 4 associated therewith with a fitting 13 therebetween. The overflow orifice 3 has an outfall conduit 5 associated therewith with a fitting 16 therebetween. The outfall conduits 4

and 5 merge in a fitting 6 from which the main outfall 7 extends.

Around the drain orifice 2 is a coniform valve seat 8 within which a valve member is reciprocated vertically. This valve member comprises a head, or valve proper 9, which is provided with an outer edge complementary to said valve seat, depending radially arranged intersecting plates 10 with outside edges loosely engaging the inner circumference of said valve seat 8, and a depending arm 11 in which is a slot 12.

In the fitting 13 connecting the drain orifice 2 of the tub with the outfall conduit 4 is a seat 32, located adjacent the connection with said conduit and transverse thereof, which seat is adapted to receive a short cylindrical member 33. Mounted on the upper side of said cylindrical member 33 is a curved lever 34 which passes through the slot 12 in the dependent arm 11. A pin 35 through the end of said lever 34 prevents the withdrawal of the valve member, which carries the dependent arm 11, off the end of said lever 34.

Also mounted on the upper side of said member 33, and approximately at right angles to said lever 34, is an apertured stud 36. A short forked rod 14 is pivotally connected to said stud 36 by a pin 37.

A flexible cable 15 is affixed to a short threaded plug 14' which is adjustably inserted in a threaded axial aperture in the free end of the short rod 14. This cable passes from the conduit 4, through the fitting 6, up the conduit 5, and ends within the fitting 16 where it is affixed to a short threaded plug 24' which is adjustably inserted in a threaded axial aperture in the lower end of another short rod 24, the upper end of which is transversely apertured for a purpose hereinafter explained.

The fitting 16 is secured about the overflow orifice 3 in a manner well understood by those familiar with the art. A short bar 18, carrying a trunnion 17 which has an axially extending ear 29, is mounted across the overflow orifice by means of screws 31 which affix it to said fitting 16. Studs 30 on one face of the said bar engage suitable notches in said fitting 16 and further assist in maintaining said bar and its associated members in operative position. Mounted through said trunnion 17 is a rotatable shaft 21 upon the end of which within the bathtub is a manipulating handle 22. The other end of said shaft 21, within the fitting 16, terminates in a bell-crank arm 23 which passes through the aperture in the upper end of the rod 24, and is held by a cotter pin through the hole 25 in the end of said bell-crank arm. Mounted on the shaft 21 intermediate the

trunnion 17 and the bell-crank arm 23 is a washer 26 upon the circumference of which is a radial stud 28. Affixed on the face of the washer 26 extending toward the bell-crank arm 23 and encompassing same is a segment of an axially-extending ring 27.

The supporting bar 18 threadably receives a screw 19 which secures a shield 20 over the overflow orifice. This shield is suitably apertured to permit the passage of overflow water.

As will readily appear from Fig. 1, the valve 9 for the drain orifice 2, when closed, will be, with its associated parts, in the position shown in dotted lines. The manipulating handle 22 and the bell-crank arm 23 on the opposite end of shaft 21 will be in the dotted position shown, i. e., will point downward. To open the drain-valve 9 the handle 22 is manipulated in either direction. Through the shaft 21 and bell-crank arm 23 this movement lifts the short rod 24 and draws on the cable 15. When the bell-crank arm 23 is turned with the shaft 21 through a short arc, it encounters an end of the segmental ring 27 carried on the washer 26 and rotates said washer 26 with said shaft until the stud 28 on the washer 26 encounters the stud 29 on the trunnion 17. The relation of the several parts is such that this encounter occurs just after the handle 22 and its associated parts have been turned past an arc of 180°. Further advance movement is impossible and the handle will not drop in the opposite direction until it has been moved reversely into the 180° arc.

As the bell-crank arm 23 was moved to the position shown in full lines in Fig. 1, i. e., through an arc of 180°, it exerted its maximum pull on the cable 15. This pull exerted through the stud 36 rolls the cylindrical member 33 in its bearing 32 and the attached curved lever 34 is lifted and encounters the upper limit of the slot 12 in the dependent arm 11 and lifts said arm and the associated parts of the valve member. The outside edges of the radial planes 10 insure a vertical movement through their contact with the inner edge of the valve seat 8.

To close the valve 9, the handle 22 is moved in the opposite direction to that used in opening and the bell-crank arm 23 returning to the dotted position releases the tension on the cable 15. The weight of the valve member presses downward on the lever 34 and rotates the member 33 until its associated parts are in the dotted position shown in Fig. 1. This movement permits the valve head 9 to slide down onto the valve seat 8.

The removal of the means for operating the drain valve is easily effected as follows: After removal of the handle 22 from the shaft 21, the plate 20 is removed, then the screws 31 holding the supporting bar 18 in place across the mouth of the fitting 16 are removed. The trunnion and bell-crank may then be drawn from the fitting far enough to permit detaching the short rod 24 from the bell-crank arm. The valve 9 may now be drawn from the drain orifice 2 and the several connected parts will follow therethrough.

In re-assembling the parts are re-inserted through the drain orifice 2 in the reverse order, the member 33 placed in its seat 32 and the upper end of the cable re-connected to the arm of the bell-crank and the parts about the overflow orifice returned to original position. It will be observed that an inclined abutment 38 is placed on the wall of the fitting 6 opposite the conduit 4 that the short rod 24 on the end of the cable

14 may be guided upward instead of downward.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the means stated in any of the following claims, or the equivalent thereof, be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In apparatus as described in combination, a valve element adapted to seat in the drain orifice of a container such as a bathtub, said element comprising a valve head, dependent guides restricting lineal movement of the valve to a vertical direction, and a dependent slotted arm; a coupling connecting the drain orifice with the main out-fall, said coupling having a half-bearing in the bottom thereof transverse to the direction of valve movement; a member removably and rotatably mounted in said half bearing, said member comprising a part having a segment of a cylindrical surface fitted in said half bearing, a forwardly extending lever engaging the slot in said arm and restrained therewithin by lateral projections on said lever, and a rearwardly extending lever, a device for manipulating said valve, and a flexible cable connecting said last named lever and said device, said device being adapted on operating to exert a pull on said cable.

2. In apparatus as described, a device for manipulating a remote valve closing the drain outlet of a container such as a bathtub, comprising a shaft rotatably mounted in a bearing and terminating in a bell-crank arm to which is attached a flexible cable connecting with the valve to be operated, said bearing carrying an axial projection, and a washer rotatably mounted on said shaft between said bearing and said bell-crank arm, said washer being adapted to be engaged by said arm and rotated therewith after same has been rotated through a small arc, and adapted to engage said projection on said bearing when the rotation of said arm has been through an arc exceeding 180°.

3. In apparatus for emptying a bath-tub and the like, in combination, drainage piping, comprising an overflow pipe, a drain pipe and a T socket through which said pipes connect with a main out-fall pipe; a wire cable within said piping; an over-flow coupling connecting said overflow pipe with an orifice in the wall of the tub; a drain coupling connecting said drain pipe with an orifice in the bottom of the tub; a valve seat about said last-named orifice; a complementary valve head mounted for vertical engagement with said seat, said valve head having dependent vertical members adapted to guide its movement; a slotted dependent arm mounted centrally of said head below said vertical members; a half-bearing seat in the bottom of said drain coupling; a roller adapted to oscillatably rest in said half-bearing seat, said roller having affixed thereto in angular relation two levers, one of which passes through said slotted arm and is restrained therewithin by a pin mounted transversely through said lever, and the other of which is pivotally attached to the lower end of said wire cable; an element mounted across the orifice in the wall of the tub; a bearing through said element; an axially projecting ear adjacent said bearing; a shaft rotatably mounted through said bearing; a bell-crank on the end of said shaft within said overflow coupling; a pivoted detachable connection between said bell crank and the upper end of said cable; and a washer rotatably mounted on said

shaft between said bearing and said bell-crank, said washer having on one face two projecting surfaces diametrically disposed and adapted to alternately engage the radial member of the bell-crank as said shaft is oscillated, and having on its edge a radially extending finger adapted to engage said ear beside said bearing as said shaft is rotated through a predetermined arc.

4. In apparatus for emptying a bath-tub and the like, in combination, drainage piping, comprising an overflow pipe, a drain pipe and a T socket through which said pipes connect with a main out-fall pipe; a wire cable within said piping; an over-flow coupling connecting said overflow pipe with an orifice in the wall of the tub; a drain coupling connecting said drain pipe with an orifice in the bottom of the tub; a valve seat about said last-named orifice; a complementary valve head mounted for vertical engagement with said seat, said valve head having dependent vertical members adapted to guide its movement; a slotted dependent arm mounted centrally of said head below said vertical members; a half-bearing seat in the bottom of said drain coupling; a roller adapted to oscillatably rest in said half-bearing seat, said roller having affixed thereto in angular relation two levers, one of which passes through said slotted arm and is restrained therewithin by a pin mounted transversely through said lever, and the other of which is pivotally attached to the lower end of said wire cable; and means mounted through the first named orifice whereby said cable may be alternately retracted and released, said means including a detachable connection with said cable.

5. In apparatus of the character described, the combination with a bath-tub and the like having drain and overflow orifices, of a branched conduit associated with said orifices, a valve seat associated with said drain orifice, a valve for said drain orifice, said valve having dependent elements adapted to restrain it from movement other than vertical and rotative and having a slotted dependent arm centrally located below said elements, a roller oscillatably mounted in a depression in the inner periphery of the drain branch of said conduit to one side of said valve and transversely of the movement thereof, a lever mounted on said roller and extending through the slot in said arm within which it is restrained by a pin mounted transversely of said lever, a second lever mounted on said roller in angular relation with said first lever, a manipulating handle mounted to extend into said overflow orifice, a wire cable through said conduit and operably connecting said handle and said last-named lever for actuating said roller whereby said valve is lifted off its seat.

6. In apparatus as described, in combination, a valve head seated in the drain outlet of a bath-tub, said valve head having a centrally disposed dependent lug with a slotted aperture therein; a half bearing seat in the drain means below said drain outlet; an operating device for said valve head comprising a flexible cable passing upward through the drain means of the tub, a roller,

oscillatably and loosely resting in said half bearing seat, two levers mounted on said roller in angular relation, one engaging said slotted aperture and one attached to said flexible cable and a pin set transversely in the end of the lever engaging said slotted aperture retaining said lever therewithin, whereby said roller and said cable may be lifted from the drain outlet with said valve head; and a manipulating handle removably engaging the other end of said cable, said handle being removably mounted through the overflow orifice of the tub through which it may be detached from said cable.

7. In apparatus as described, a device for manipulating a remote valve closing the drain outlet of a container such as a bath tub, comprising a shaft, rotatably mounted in a bearing and carrying a bell-crank arm to which is attached flexible means connecting with the valve to be operated; a fixed stop in spaced radial relation with the axis of said shaft; and a washer rotatably mounted on said shaft between the bearing thereof and said bell-crank arm, said washer having a portion so shaped that its face engages said arm during rotation of said shaft, and having a portion so shaped that it presents a face which engages said fixed stop when said arm is rotated through a predetermined arc.

8. In apparatus as described, a device for manipulating a remote valve closing the drain outlet of a container such as a bathtub, comprising a shaft rotatably mounted in a bearing and carrying an operating handle and a bell-crank arm to which is attached flexible means connecting with the valve to be operated; a washer rotatably mounted on said shaft between its bearing and said crank arm; and a fixed element so shaped and positioned that it engages and holds said washer after it is rotated through a predetermined arc, said washer carrying a shaped portion engageable by said fixed element, and another shaped portion engageable by said bell-crank arm whereby the said washer is rotated with said arm until it has rotated through said predetermined arc and engaged said fixed element.

9. In apparatus as described, a device for manipulating a remote valve closing the drain outlet of a container such as a bathtub, comprising a shaft rotatably mounted in a bearing, said shaft carrying an operating handle and a bell-crank arm to which is attached flexible means connecting with the valve to be operated; a washer rotatably mounted on said shaft adjacent said crank arm; a fixed stop so mounted as to engage and hold said washer after it is rotated in either direction through predetermined arcs, said washer having an element mounted thereon engageable by said fixed stop, and having spaced faces on shaped portions thereof engageable by said bell-crank arm whereby the said washer is rotated as the shaft is revolved in either direction until said stop intercepts and holds said element.

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2.268, 819

Groeniger

Does not have
racking left arm

Jan. 6, 1942.

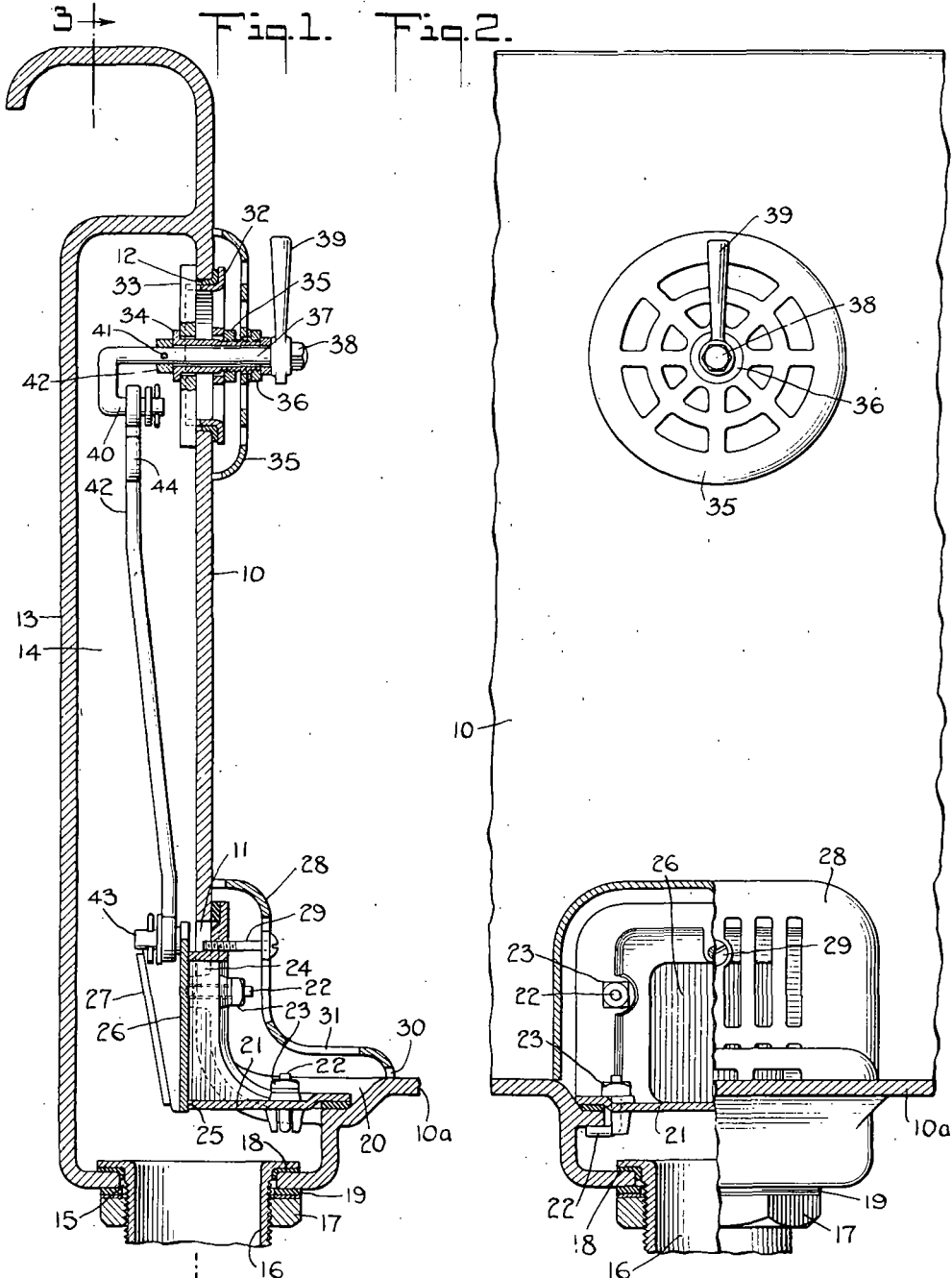
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2,268,819

WASTE AND OVERFLOW VALVE

Filed May 11, 1939

2 Sheets-Sheet 1



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WASTE AND OVERFLOW VALVE

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2 Sheets-Sheet 2

Fig. 3.

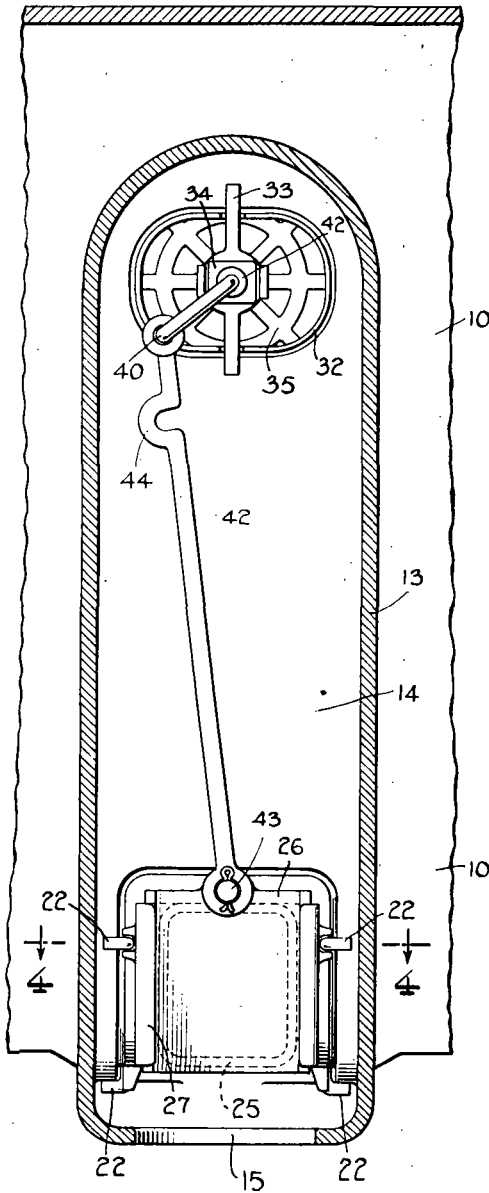
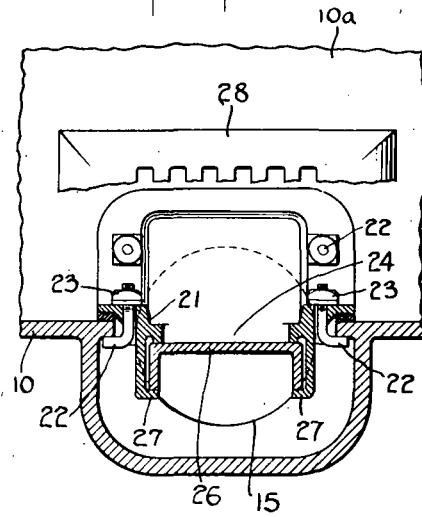


Fig. 4.



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UNITED STATES PATENT OFFICE

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WASTE AND OVERFLOW VALVE

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Application May 11, 1939, Serial No. 272,995

1 Claim. (Cl. 4—199)

My present invention relates to waste and overflow outlets for baths, sinks, basins and the like, and more particularly to waste and overflow outlet fittings for such waste and overflow outlets.

My invention is adapted for use in connection with any receptacle for liquids in which it is desired to provide an outlet for discharging the liquid therefrom, and functions to permit the discharge of liquid from the receptacle and prevents the level of the liquid in such receptacle from rising above a predetermined height. Also the fittings to be used in connection with the waste and overflow outlet may be readily assembled and disassembled in the waste and overflow outlet fitting with a minimum of effort.

The object of my invention, therefore, is an improved waste and overflow outlet fitting for a receptacle for liquids, such as a bath tub, and to the fittings applicable therefor.

A feature of my invention is a waste and overflow outlet fitting formed as an integral part of a receptacle for liquids and the like.

A further feature of my invention is an improved waste and overflow outlet fitting formed integral with a receptacle for liquids and the like, and wherein the waste and overflow outlet openings from the container lead directly to the outlet fitting.

A still further feature of my invention is an improved waste and overflow outlet fitting for a receptacle for liquids and the like, in which the fittings therefor may be placed in position and adjusted with minimum of effort.

Other features of the invention will appear as the description thereof progresses.

In the accompanying drawings:

Fig. 1 is a sectional side elevation of the waste outlet end of a receptacle, such as a bath tub, and with which my present invention forms an integral part;

Fig. 2 is a front elevation, viewed from the inside of the receptacle, and illustrating the structure shown in Fig. 1;

Fig. 3 is a sectional side elevation, taken on the line 3—3 of Fig. 2; and

Fig. 4 is a sectional plan view taken on the line 4—4 of Fig. 3.

Referring to the drawings, 10 designates the waste outlet end of a bath tub or other receptacle 10a for liquids, such as water. Such waste outlet end has a waste outlet 11, and an overflow outlet 12, formed integral therewith and arranged at the bottom of and adjacent to the top respectively of the receptacle 10a.

Formed as an integral part of the container is a waste and overflow outlet fitting 13 forming a chamber, of which the outlet end 10 of the receptacle 10a forms a part. The waste outlet 11 and the overflow outlet 12 communicate directly with the chamber 14 and into which liquid will flow from the outlet 11, or from the overflow outlet 12 should the level of the fluid within the receptacle 10a rise too high.

Formed in the outlet fitting 13 is a passage 15 which is arranged at the lowest point thereof and has associated therewith the usual nipple 16, nut 17 and washers 18 and 19 respectively, and which in association with the nipple 16 and nut 17 serve to make a liquid-tight joint between the nipple 16 and fitting 13. Adjacent to the outlet 11, the bottom of the waste outlet end 10 of the receptacle 10a is provided with a depression 20 which acts as a means for insuring that all of the liquid within the receptacle may be withdrawn therefrom.

Associated with the waste outlet opening 11 is a valve member 21, such valve member being secured to the container 10a by bolts 22 and nuts 23, as clearly shown in Figures 1 and 2. The valve member 21 is provided with an opening or orifice 24 through which liquid may pass from the container 10a into the chamber 14. At the end of the passage 24 is formed a valve seat 25 and with which a valve 26, preferably of the shear gate type, may be brought into engagement. Formed integral with the valve member 21 are aligned guides 27 in which is slidably mounted the shear gate valve 26.

Fitting over the receptacle end of the valve member 21 is a combined screen and guard member 28, held securely in position by means of a screw 29 which engages in a threaded hole in the member 21. This combined screen and guard member 28 is provided with a plurality of the openings or passages 30, 31, etc., and it is noted that the openings or passages 30, 31, etc. are so arranged as not to obstruct the flow of liquid from the container. In other words, the combined screen and guard member permits every drop of liquid to flow out of the receptacle 10.

Associated with the overflow outlet 12 is a combined grate and bearing member 32, with which cooperates a member 33. The member 32 is in the receptacle 10a and the member 33 is located within the chamber 14. The members 32 and 33 are perforated to receive the sleeve bearing 34, threaded at its outer end to receive the nut 35 for clamping the members 32 and 33 together in adjusted position relative to the overflow out-

let opening 12. Fitting over the overflow outlet opening 12, and enclosing the member 32, is a combined guard and grate 35, secured in position by the nut 36 which screws onto the threaded end of the sleeve bearing 34.

Rotatably mounted in the sleeve bearing 34 is a shaft 37, to the outer end of which is attached, by nut 38, an operating handle 39, and the inner end thereof, that is, that portion within the chamber 14, is offset and a portion 40 of such offset lies parallel to the shaft 37. On the shaft 37, and engaging the rear end of the sleeve bearing 34, and held in position by the pin 41, is a collar 42 which prevents undue end play of the shaft 37 in the sleeve bearing 34. To the portion 40 of the offset is pivotally attached the upper end of a connecting rod 42 and the lower end of this connecting rod is pivotally attached to a shaft 43 forming part of the shear gate valve 26.

In order to insure a sufficient vertical movement of the shear gate valve 26, I have provided the connecting rod 42 with a lateral groove formed in an extension 44 which, as the shaft 37 is rotated, engages with the shaft 37 and thus permits a slightly greater rotative movement of the shaft 37 when the same is rotated to move the shear gate valve 26 upwardly, as viewed in Figures 1 and 3.

The structure above described and associated with the overflow outlet opening 12, the connecting rod 42, and the shear gate valve 26, are assembled as above described and then threaded in through the overflow outlet opening 12 into the position shown in Figure 1 after which the mem-

bers 32 and 33 are clamped securely in position by the adjustment of the nut 35, and all necessary adjustments may be made without disturbing the assembly of the elements referred to.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

An improved waste and overflow outlet fitting for receptacles for liquid and in which receptacles a hollow outlet passage is arranged integral with and at the outlet end thereof, said receptacle having a waste outlet lying in its bottom and top respectively and communicating with the interior of the outlet passage, said fitting comprising a member constituting a substantially right angled closure for the waste outlet, a part of said fitting lying substantially parallel to and below the inner surface of the receptacle means for securing said member to the receptacle about the periphery of the waste outlet, a grating covering said member while permitting flow of water thereto, a passage extending through said member, a valve seat formed at the outer end of said passage and within the outlet passage, a shear gate valve mounted in said member and cooperating with the valve seat, operating means for operating the shear gate valve mounted in the overflow outlet of the receptacle, and a connecting rod extending between the operating means and the shear gate valve.

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Fredrickson

Does not have
rocking lift pin.

Feb. 3, 1942.

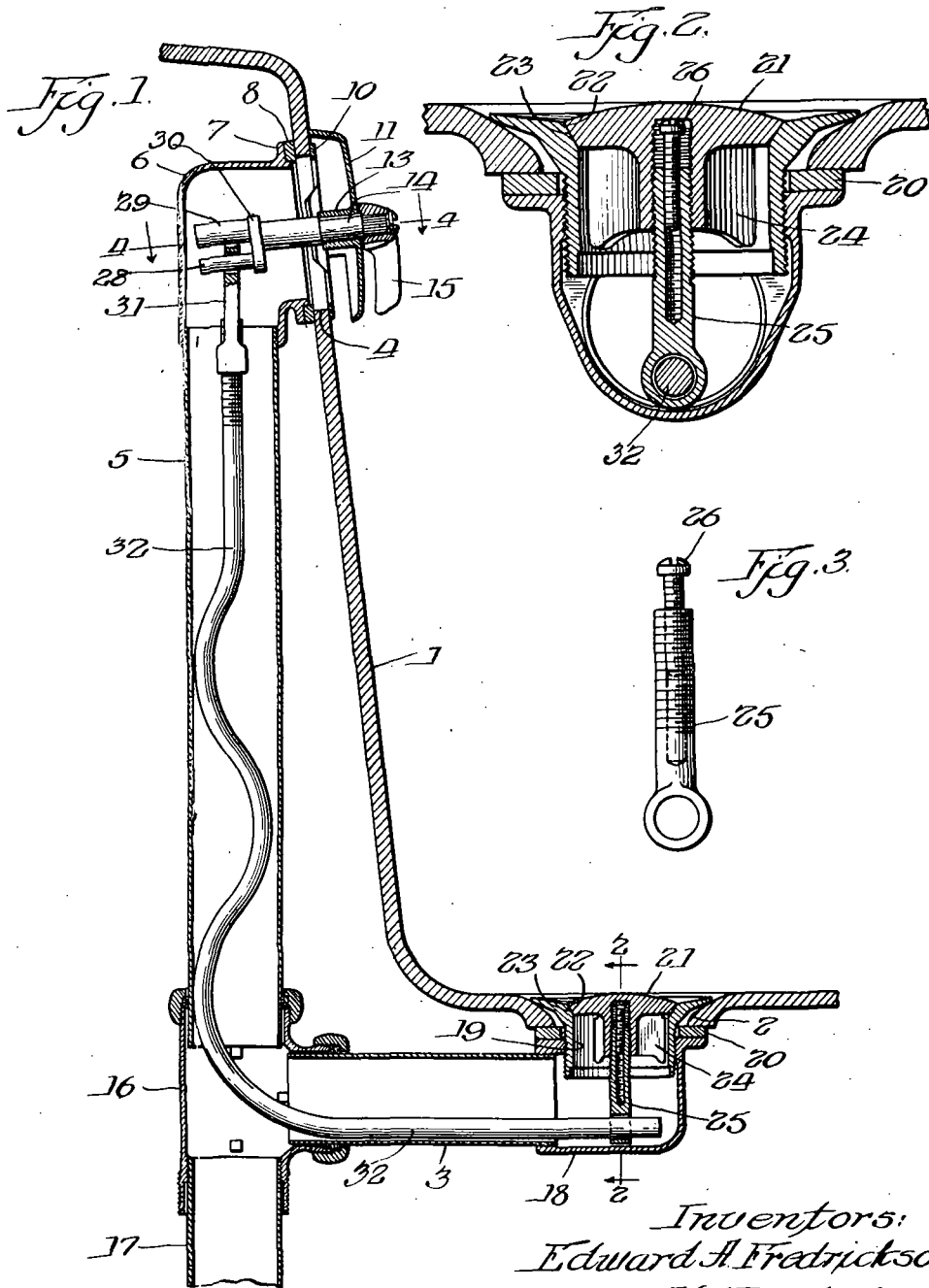
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2,271,837

COMBINED WASTE AND OVERFLOW MECHANISM

Filed Jan. 6, 1941

2 Sheets-Sheet 1



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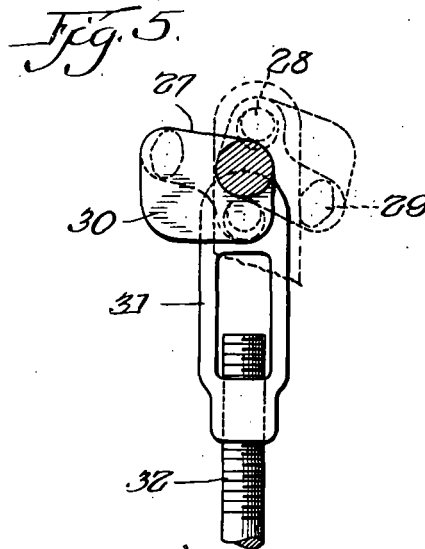
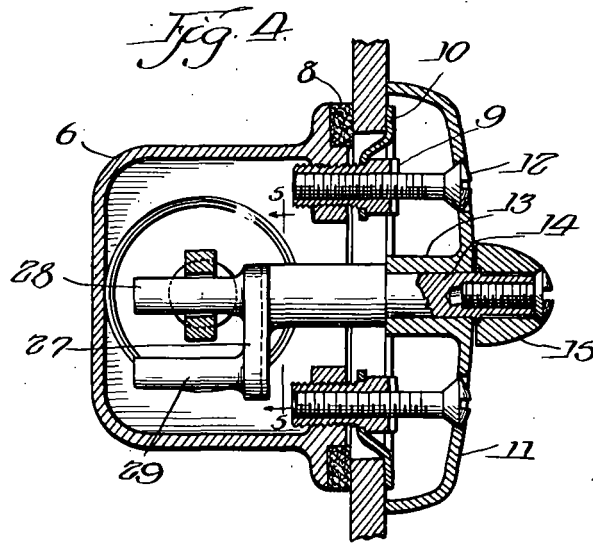
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2,271,837

COMBINED WASTE AND OVERFLOW MECHANISM

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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COMBINED WASTE AND OVERFLOW
MECHANISM

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Application January 6, 1941, Serial No. 373,214

7 Claims. (Cl. 4-199)

This invention relates to an improved waste valve and overflow combination for bathtubs, lavatories, etc., and is particularly concerned with a novel form of operating means by which the waste discharge valve may be readily opened and closed by means of a comparatively simple and sturdy construction.

The embodiment of our invention set forth in the accompanying drawings and in the description which follows is especially suited for use with plumbing fixtures of the kind which are usually employed in connection with built-in bathtubs, for example, although it will be apparent that it may be employed advantageously with lavatories, sinks, washbasins, and the like. With built-in bathtubs, for instance, the overflow and waste pipes are usually positioned within the wall at one end of the tub and thereafter concealed behind the wall of the tub or fixture proper, making inspection or repair relatively difficult. In realization of this problem, efforts in the past have been directed to constructing the waste valve operating mechanism so that it might fit inside the conventional L-shaped channel or conduit connecting the overflow and waste openings. The general practice has been to extend the waste valve operating mechanism through this L-shaped passage from the overflow outlet to the waste outlet. In order to make the mechanism fit operably into this relatively restricted channel and also be removable for repair, it has necessarily required a relatively complicated structure, expensive to manufacture.

Accordingly, an important object of our invention lies in the provision of an overflow and waste operating mechanism for assembly within the overflow and waste pipes of the character described in which quick and simple adjustments may be made in the seating position of the waste valve or in making simple repairs to the valve seating surface or waste valve during the course of actual service.

Another object lies in the provision of a rigid or semi-rigid, generally L-shaped serpentine or undulated form of lift rod which fits snugly within the overflow pipe guide means or conduit and extends into the horizontal portion of the waste pipe where the plain end thereof may engage a complementary downwardly projecting portion of the waste plug for the purpose of providing an improved guided operating mechanism as hereinafter explained in greater detail.

Additional objects and advantages will become more readily apparent upon proceeding with the

following description in connection with the accompanying drawings, in which—

Fig. 1 is a vertical sectional assembly view of a preferred mechanism embodying our invention.

Fig. 2 is an enlarged sectional view taken on the line 2-2 of Fig. 1.

Fig. 3 is a vertical exterior view of a preferred form of combined waste valve support and adjustment means therefor.

Fig. 4 is a sectional view taken on the line 4-4 of Fig. 1.

Fig. 5 is a vertical view taken on the line 5-5 of Fig. 4 showing the detailed form of crank means for actuation of the valve from open to closed position and vice versa.

Like reference characters indicate like parts throughout the various views.

Referring to Fig. 1, the numeral 1 refers generally to the end of a bathtub of the built-in type, or similar fixture, having the waste or drain opening 2 associated with the laterally disposed waste pipe 3. At its upper portion of the end wall the tub 1 is provided with the usual overflow aperture 4 cooperating with the vertically extending overflow tube or stand pipe 5. The overflow tube 5 is connected at its upper end in the usual manner to the tub overflow opening 4 by means of an elbow-fitting 6 having a flange 7 positioning an annular gasket 8 pressed against the outer face of the tub wall.

As more clearly shown in Fig. 4, connected with the elbow-fitting 6 by means of the internally and externally hollow screws 9, the apertured annular plate 10 bears against the inner face of the tub wall. A cover plate 11 is positioned over the overflow opening 4 of the tub 1 by means of screws 12 which are threadedly connected to the aforementioned hollow screws 9. The cover plate 11 serves the two-fold purpose of first, concealing the overflow opening proper, and secondly, providing the actuating mechanism bearing 13. Rotatably mounted within the bearing 13 the stem 14 is positioned having an operating handle 15 attached, as indicated, at one end thereof.

Referring again to Fig. 1, the overflow and waste pipes at their intersection are connected to the T-fitting 16 in the manner indicated, thereafter discharging into the outlet pipe 17, and thence into the usual trap and sewer (not shown).

The waste pipe 3 is threaded into the waste elbow 18 which is held against the underside of the waste opening 2 by means of the seat bushing 19 which is screwed into the vertical opening of the waste elbow 18 from the inside of the tub, with a suitable gasket or packing 20 interposed

to prevent fluid leakage therebetween. A suitable reciprocably movable waste valve plug 21 is positioned within the seat bushing 19 having the frusto-conical seating face 22 cooperating in water-tight relation with the bushing seating surface 23. Preferably, but not necessarily, the waste plug 21 is provided with a plurality of guide ribs 24 which thereby serve to position the valve plug centrally within the seat bushing 19. The valve plug 21 is threadedly assembled with the guide link 25 and frictionally locked against rotational removal by effecting an abutting contact with the top or head portion of the set screw 26. The locking referred to is easily accomplished by reason of the fact that preferably the inside and outside threads of the link 25 may be either of different pitch or else threaded in opposite directions. It will therefore become apparent from the drawings that the vertical position of the valve 21 with respect to the link 25 or the waste opening 2 is readily determined by the distance from which the head of the set screw 26 extends beyond the end of the link 25; and it is the method of providing this simple adjustment which we regard as an essential phase of our inventive combination.

Referring again to Fig. 4, the novel mechanism by which the waste valve is operated comprises a linkage arrangement consisting essentially of two units. At the outset, attention is directed to the crank arm 27 which is carried by the rotatable stem 14, a crank pin 28 and a stop pin 29 extending laterally therefrom, the two pins preferably being positioned in such manner with respect to the extended axis of the stem that lines connecting the axes of the pins with the axis of the stem form approximately a right angle. The crank arm 27 is preferably provided with the ribbed extension 30 (Fig. 5), the latter serving as means for eliminating the possibility of the crank member 27 accidentally dropping to the bottom of the overflow pipe during assembly and from which it might be difficult to retrieve.

The first unit of our operating mechanism comprises an apertured head or turnbuckle 31 (Fig. 5) which is adapted to be connected operably and removably with the crank pin 28, as shown, and is mounted adjustably by means of its screw threads upon the upper portion of the substantially L-shaped serpentine lift rod 32. The lift rod 32 is restricted substantially to vertical movement within the overflow pipe by reason of its serpentine shape which enables it to slidably contact the inside wall of the overflow pipe 5 at a number of locations, as illustrated more clearly in Fig. 1. The lower portion of the lift rod 32 is formed to pass through the T-fitting 16 and extends horizontally through the waste pipe 3 and similarly engages operably with the valve supporting link 25.

The second unit of our assembly comprises the waste valve plug 21, the set screw 26, and the supporting link 25 which, in accomplishing, simple adjustability, have been previously described in detail.

Thus it is apparent that to operate our present device it is only necessary to turn the handle 15 in a clockwise direction and the valve 21 will be raised accordingly to empty the bathtub or other receptacle with which our invention may be associated. The rotation of the handle 15 may extend through approximately 180 degrees at which position the stop pin 29 engages with the turnbuckle 31, as shown by the broken lines in Fig. 5, so as to arrest further rotative movement. In

the latter position the crank arm is thus located beyond dead-center and the entire suspended mechanism is therefore maintained securely in the desired position when the valve is open. Conversely, by rotation of the handle 15 in the opposite direction (counter-clockwise) the suspended mechanism will be lowered until the valve plug 21 is again seated, as shown in Fig. 1.

Previously, efforts have been directed to the construction of waste valve operating mechanisms which were necessarily required to be removable for ready adjustment of the waste valve plug with its seat. Since it is not necessary to remove the present lifting device for adjustment, it has been possible to form the lift rod 32 with its serpentine configuration for positively guiding against horizontal movement. It has also been provided with sufficient rigidity to transmit required force through the lift rod to operate the waste valve with a minimum predetermined amount of rotative motion of the operating handle 15.

It is clear from the description thus far that there are two methods of adjusting the position of the waste valve plug with relation to its seat 22. The first, as already described, is preferably used for such minor adjustments as may be due to ordinary wear, etc., and which adjustments are easily and accurately effected by varying the extension of the set screw 26 beyond the end of the threaded supporting link 25. The second method now to be considered is useful for major adjustments and specifically allows for the axial position of the turnbuckle 31 on the upper threaded portion of the lift rod 32 to be varied, access being had thereto by removing the screws 12 followed by the removal of the handle 15, the cover plate 11, and the operating stem, preferably as a unit.

In summary, our invention comprises two elements or units acting either singly or in combination to produce an improved plumbing overflow and waste operating mechanism which lends itself readily to positive operation, better guiding with a superior and novel means of adjustment.

Having thus described a preferred embodiment of our invention, it is to be understood that various changes and modifications may be made within the spirit and scope of the claims appended hereto.

We claim:

1. In a waste and overflow mechanism, the combination with a receptacle having respective waste and overflow orifices, a substantially L-shaped conduit having end portions associated with the orifices of the said receptacle, a closure member cooperating with the said waste orifice, substantially L-shaped rod means within said L-shaped conduit removably connected to the said closure member and extending substantially to the said overflow orifice, said rod means within the said L-shaped conduit comprising a plurality of undulations, lifting means for said rod means positioned within said overflow orifice whereby convex portions of the undulations of the said rod means slidingly contact with diametrically opposite inner peripheral portion of the said conduit to guide the said rod means upon actuation of the said lifting means.

2. In a waste and overflow mechanism, the combination comprising a fixture having respective waste and overflow openings, the said openings being connected by a substantially L-shaped conduit discharging into a suitable outlet, a valve member controlling the flow of fluid through the

said waste opening, adjusting means associated with the said valve member whereby the axial position of the said valve member with relation to the said waste opening may be varied within predetermined limits, rod means within said L-shaped conduit connected operably to said valve member and extending substantially to said overflow opening, the rod means being formed to contact diametrically opposite points of the inside wall of the L-shaped conduit and thereby prevent lateral movement of the said rod means, the said adjusting means comprising interconnected threaded members, one of the said threaded members having operative connection with the said rod and with the said closure member, the second threaded member being threadedly connected to the first threaded member and interposed between the said closure member and the said first threaded member.

3. The combination of a waste and overflow mechanism, a receptacle having waste and overflow openings, a branched conduit associated with said overflow opening and said waste opening, a closure member cooperating with said waste opening, means cooperating with the said closure member whereby the axial position of said valve with relation to the waste opening may be adjusted, a rod member within said branched conduit operatively connected to the said valve and extending substantially to the said overflow opening, the said adjusting means consisting of telescopically related members connecting the said closure member with the said rod member, actuating means cooperating with said overflow opening to lift or lower said rod member.

4. In apparatus of the character described, the combination, with a receptacle having drain and overflow orifices, of a branched outfall conduit associated with said orifices, a valve in axial alignment with said drain orifice and cooperating therewith to regulate the outflow of fluid from the receptacle, adjusting means associated with said valve member whereby the axial position of said valve member may be limitedly varied, the said adjusting means comprising interconnected threaded members, rod means within said conduit removably connected to the said valve and extending in a vertically guided manner within the said conduit to the said overflow orifice, a portion of said rod means providing a guide at a plurality of locations at different levels to inhibit substantial lateral movement within the conduit, adjustable means cooperating with said rod means.

5. In apparatus of the character described, the combination, with a receptacle having drain and overflow orifices, of a substantially L-shaped conduit connecting the said orifices, a valve member having an internally threaded shank cooperating with said drain orifice to regulate the flow of fluid therethrough, means for adjusting the longitudinal position of said valve member with relation to said drain orifice, said adjusting means comprising axially aligned means consisting of a guide link having a threaded adjusting means in the upper portion thereof and the said guide link threaded to the said valve shank, whereby said members are frictionally locked against rotational movement by effecting an abutting contact with the upper portion of the threaded adjusting means, curved rod means within the said L-shaped conduit operably connected to the said valve member, a portion of said rod means positioned within the vertical portion of the said L-

shaped conduit being of serpentine form and in slidable contact with opposite sides of the walls thereof, whereby the said upper rod portion is substantially limited to vertical movement, rotatably actuated lifting means for the said rod means journaled within the said overflow orifice with overthrow means to maintain said valve member in fully open position.

6. In apparatus of the character described, the combination, with a bathtub or the like having waste and overflow openings, of a substantially L-shaped branched conduit associated with the said openings, an adjustably mounted waste valve member regulating the flow of fluid through the said waste opening, adjustment means in axial alignment with the said valve member and cooperating to regulate the axial position thereof with relation to the said waste opening, said adjustment means comprising axially aligned interconnected members, curved rod means within the said L-shaped conduit, the said rod having a serpentine portion within the overflow pipe of said conduit contacting at a plurality of oppositely disposed portions of the inside walls of said overflow pipe whereby transverse motion of the rod is substantially restrained, the said rod means being operably connected to the said valve member for positive opening and closing, and extending backward to said overflow opening, a rotatable stem journaled within said overflow opening and having at the inside end thereof rod-like continuations positioned in such a manner that a pair of lines drawn respectively from the axis of one of the said continuations to the axis of the said stem would be substantially perpendicular to the other, one of said continuations being operably secured to the said rod means, the said stem having actuating means whereby the said continuation which is operably secured to the said rod means may be rotated past a dead-center position to maintain the waste valve in the open position.

7. In apparatus of the character described, the combination, with a fixture such as a bathtub or the like having respective drain and overflow orifices, of a substantially L-shaped conduit cooperating with the said openings, a valve for said drain opening, threaded adjustment means cooperating with the said valve for regulating the position thereof with respect to the said drain opening, L-formed lift rod means within the said L-shaped conduit with the lower portion thereof in positive operative relationship with the said valve member and the upper portion thereof terminating adjacent the said overflow orifice, the portion of said lift rod within the overflow pipe of said L-shaped conduit having a serpentine shape and in slidable contact at a plurality of points with the inside wall of said overflow pipe, whereby the lift rod is movable vertically but not horizontally, an operating stem mounted rotatably within said overflow orifice, said stem having at the inside end thereof off-center, unidirectional continuations functioning respectively as a crank pin and a stop pin, the said crank pin being removably indexed within the upper extremity of the said rod, the said stem having at its outside extremity an operating handle, whereby the said crank pin may be rotated past the dead-center position on the stem whereby upon predetermined rotation the drain valve may be lifted by the said lift rod into a stable open position.

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Feb. 3, 1942.

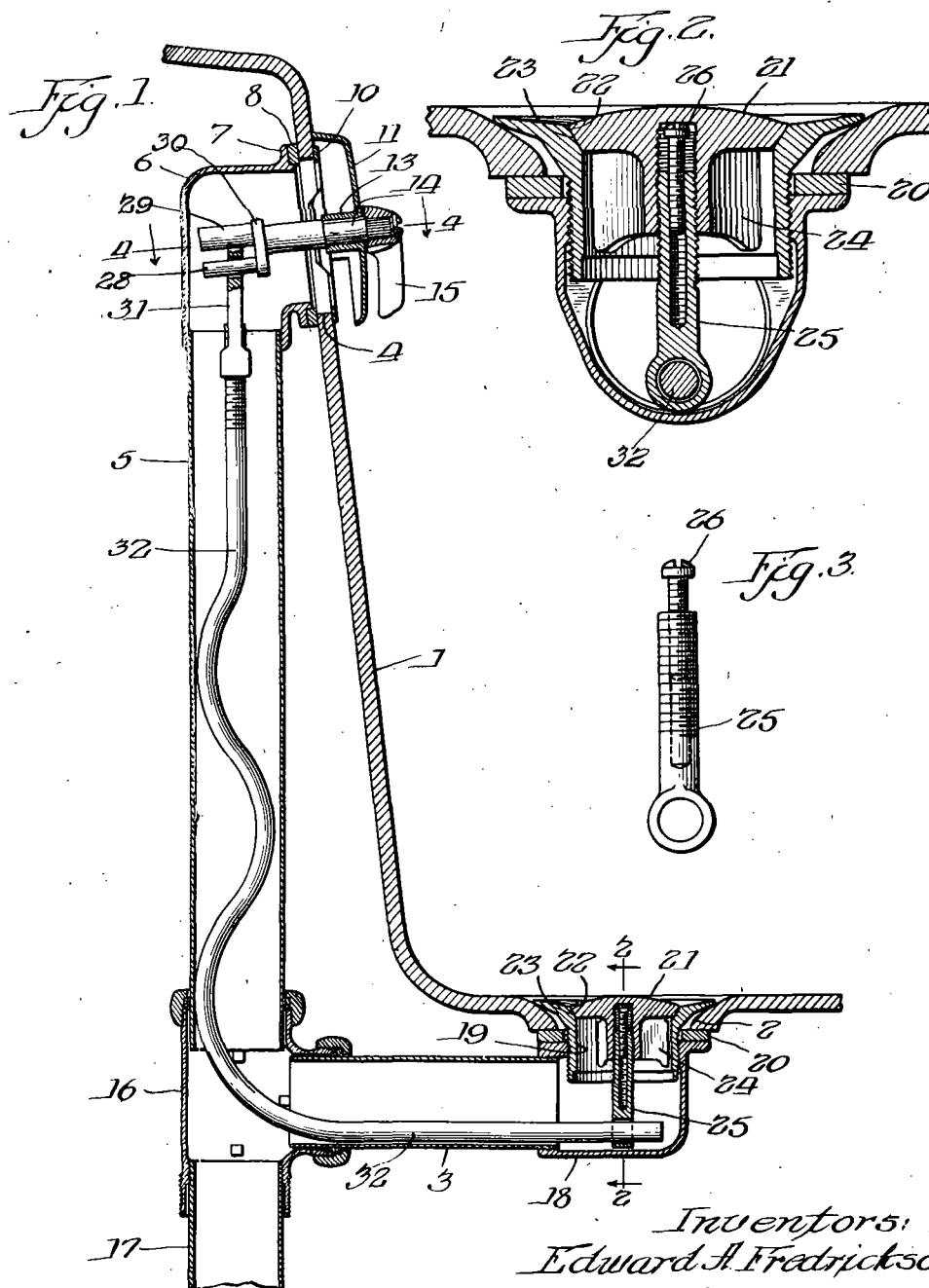
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2,271,837

COMBINED WASTE AND OVERFLOW MECHANISM

Filed Jan. 6, 1941

2 Sheets-Sheet 1



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Feb. 3, 1942.

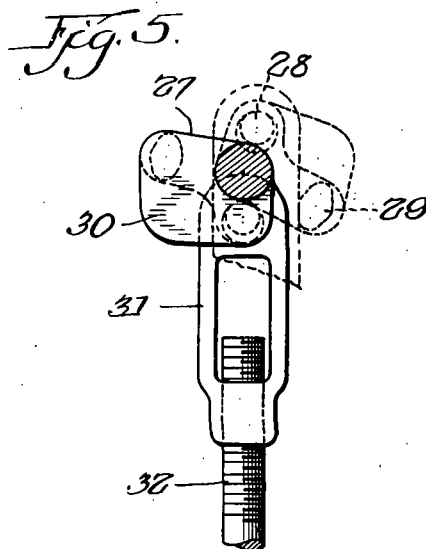
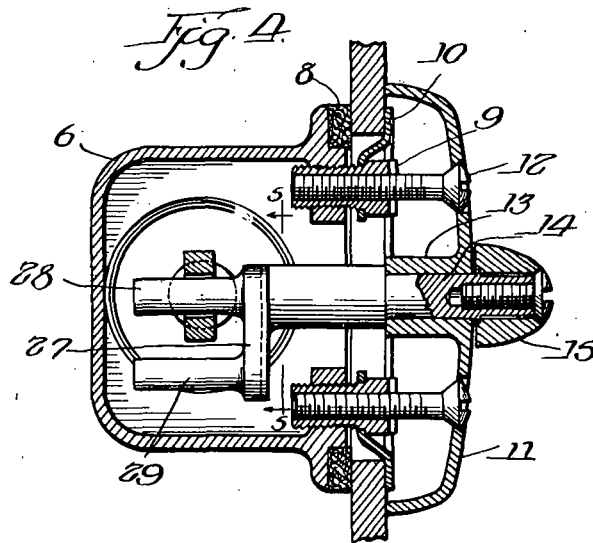
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COMBINED WASTE AND OVERFLOW MECHANISM

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2 Sheets-Sheet 2



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2,271,837

COMBINED WASTE AND OVERFLOW
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Application January 6, 1941, Serial No. 373,214

7 Claims. (Cl. 4—199)

This invention relates to an improved waste valve and overflow combination for bathtubs, lavatories, etc., and is particularly concerned with a novel form of operating means by which the waste discharge valve may be readily opened and closed by means of a comparatively simple and sturdy construction.

The embodiment of our invention set forth in the accompanying drawings and in the description which follows is especially suited for use with plumbing fixtures of the kind which are usually employed in connection with built-in bathtubs, for example, although it will be apparent that it may be employed advantageously with lavatories, sinks, washbasins, and the like. With built-in bathtubs, for instance, the overflow and waste pipes are usually positioned within the wall at one end of the tub and thereafter concealed behind the wall of the tub or fixture proper, making inspection or repair relatively difficult. In realization of this problem, efforts in the past have been directed to constructing the waste valve operating mechanism so that it might fit inside the conventional L-shaped channel or conduit connecting the overflow and waste openings. The general practice has been to extend the waste valve operating mechanism through this L-shaped passage from the overflow outlet to the waste outlet. In order to make the mechanism fit operably into this relatively restricted channel and also be removable for repair, it has necessarily required a relatively complicated structure, expensive to manufacture.

Accordingly, an important object of our invention lies in the provision of an overflow and waste operating mechanism for assembly within the overflow and waste pipes of the character described in which quick and simple adjustments may be made in the seating position of the waste valve or in making simple repairs to the valve seating surface or waste valve during the course of actual service.

Another object lies in the provision of a rigid or semi-rigid, generally L-shaped serpentine or undulated form of lift rod which fits snugly within the overflow pipe guide means or conduit and extends into the horizontal portion of the waste pipe where the plain end thereof may engage a complementary downwardly projecting portion of the waste plug for the purpose of providing an improved guided operating mechanism as herein after explained in greater detail.

Additional objects and advantages will become more readily apparent upon proceeding with the

following description in connection with the accompanying drawings, in which—

Fig. 1 is a vertical sectional assembly view of a preferred mechanism embodying our invention.

Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a vertical exterior view of a preferred form of combined waste valve support and adjustment means therefor.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1.

Fig. 5 is a vertical view taken on the line 5—5 of Fig. 4 showing the detailed form of crank means for actuation of the valve from open to closed position and vice versa.

Like reference characters indicate like parts throughout the various views.

Referring to Fig. 1, the numeral 1 refers generally to the end of a bathtub of the built-in type, or similar fixture, having the waste or drain opening 2 associated with the laterally disposed waste pipe 3. At its upper portion of the end wall the tub 1 is provided with the usual overflow aperture 4 cooperating with the vertically extending overflow tube or stand pipe 5. The overflow tube 5 is connected at its upper end in the usual manner to the tub overflow opening 4 by means of an elbow-fitting 6 having a flange 7 positioning an annular gasket 8 pressed against the outer face of the tub wall.

As more clearly shown in Fig. 4, connected with the elbow-fitting 6 by means of the internally and externally hollow screws 9, the apertured annular plate 10 bears against the inner face of the tub wall. A cover plate 11 is positioned over the overflow opening 4 of the tub 1 by means of screws 12 which are threadedly connected to the aforementioned hollow screws 9. The cover plate 11 serves the two-fold purpose of first, concealing the overflow opening proper, and secondly, providing the actuating mechanism bearing 13. Rotatably mounted within the bearing 13 the stem 14 is positioned having an operating handle 15 attached, as indicated, at one end thereof.

Referring again to Fig. 1, the overflow and waste pipes at their intersection are connected to the T-fitting 16 in the manner indicated, thereafter discharging into the outlet pipe 17, and thence into the usual trap and sewer (not shown).

The waste pipe 3 is threaded into the waste elbow 18 which is held against the underside of the waste opening 2 by means of the seat bushing 19 which is screwed into the vertical opening of the waste elbow 18 from the inside of the tub, with a suitable gasket or packing 20 interposed

to prevent fluid leakage therebetween. A suitable reciprocally movable waste valve plug 21 is positioned within the seat bushing 19 having the frusto-conical seating face 22 cooperating in water-tight relation with the bushing seating surface 23. Preferably, but not necessarily, the waste plug 21 is provided with a plurality of guide ribs 24 which thereby serve to position the valve plug centrally within the seat bushing 19. The valve plug 21 is threadedly assembled with the guide link 25 and frictionally locked against rotational removal by effecting an abutting contact with the top or head portion of the set screw 26. The locking referred to is easily accomplished by reason of the fact that preferably the inside and outside threads of the link 25 may be either of different pitch or else threaded in opposite directions. It will therefore become apparent from the drawings that the vertical position of the valve 21 with respect to the link 25 or the waste opening 2 is readily determined by the distance from which the head of the set screw 26 extends beyond the end of the link 25, and it is the method of providing this simple adjustment which we regard as an essential phase of our inventive combination.

Referring again to Fig. 4, the novel mechanism by which the waste valve is operated comprises a linkage arrangement consisting essentially of two units. At the outset, attention is directed to the crank arm 27 which is carried by the rotatable stem 14, a crank pin 28 and a stop pin 29 extending laterally therefrom, the two pins preferably being positioned in such manner with respect to the extended axis of the stem that lines connecting the axes of the pins with the axis of the stem form approximately a right angle. The crank arm 27 is preferably provided with the ribbed extension 30 (Fig. 5), the latter serving as means for eliminating the possibility of the crank member 27 accidentally dropping to the bottom of the overflow pipe during assembly and from which it might be difficult to retrieve.

The first unit of our operating mechanism comprises an apertured head or turnbuckle 31 (Fig. 5) which is adapted to be connected operably and removably with the crank pin 28, as shown, and is mounted adjustably by means of its screw threads upon the upper portion of the substantially L-shaped serpentine lift rod 32. The lift rod 32 is restricted substantially to vertical movement within the overflow pipe by reason of its serpentine shape which enables it to slidably contact the inside wall of the overflow pipe 5 at a number of locations, as illustrated more clearly in Fig. 1. The lower portion of the lift rod 32 is formed to pass through the T-fitting 16 and extends horizontally through the waste pipe 3 and similarly engages operably with the valve supporting link 25.

The second unit of our assembly comprises the waste valve plug 21, the set screw 26, and the supporting link 25 which, in accomplishing simple adjustability, have been previously described in detail.

Thus it is apparent that to operate our present device it is only necessary to turn the handle 15 in a clockwise direction and the valve 21 will be raised accordingly to empty the bathtub or other receptacle with which our invention may be associated. The rotation of the handle 15 may extend through approximately 180 degrees at which position the stop pin 29 engages with the turnbuckle 31, as shown by the broken lines in Fig. 5, so as to arrest further rotative movement. In

the latter position the crank arm is thus located beyond dead-center and the entire suspended mechanism is therefore maintained securely in the desired position when the valve is open. Conversely, by rotation of the handle 15 in the opposite direction (counter-clockwise) the suspended mechanism will be lowered until the valve plug 21 is again seated, as shown in Fig. 1.

Previously, efforts have been directed to the construction of waste valve operating mechanisms which were necessarily required to be removable for ready adjustment of the waste valve plug with its seat. Since it is not necessary to remove the present lifting device for adjustment, it has been possible to form the lift rod 32 with its serpentine configuration for positively guiding against horizontal movement. It has also been provided with sufficient rigidity to transmit required force through the lift rod to operate the waste valve with a minimum predetermined amount of rotative motion of the operating handle 15.

It is clear from the description thus far that there are two methods of adjusting the position of the waste valve plug with relation to its seat 22. The first, as already described, is preferably used for such minor adjustments as may be due to ordinary wear, etc., and which adjustments are easily and accurately effected by varying the extension of the set screw 26 beyond the end of the threaded supporting link 25. The second method now to be considered is useful for major adjustments and specifically allows for the axial position of the turnbuckle 31 on the upper threaded portion of the lift rod 32 to be varied, access being had thereto by removing the screws 12 followed by the removal of the handle 15, the cover plate 11, and the operating stem, preferably as a unit.

In summary, our invention comprises two elements or units acting either singly or in combination to produce an improved plumbing overflow and waste operating mechanism which lends itself readily to positive operation, better guiding with a superior and novel means of adjustment.

Having thus described a preferred embodiment of our invention, it is to be understood that various changes and modifications may be made within the spirit and scope of the claims appended hereto.

✓ We claim:

1. In a waste and overflow mechanism, the combination with a receptacle having respective waste and overflow orifices, a substantially L-shaped conduit having end portions associated with the orifices of the said receptacle, a closure member cooperating with the said waste orifice, substantially L-shaped rod means within said L-shaped conduit removably connected to the said closure member and extending substantially to the said overflow orifice, said rod means within the said L-shaped conduit comprising a plurality of undulations, lifting means for said rod means positioned within said overflow orifice whereby convex portions of the undulations of the said rod means slidably contact with diametrically opposite inner peripheral portion of the said conduit to guide the said rod means upon actuation of the said lifting means.

2. In a waste and overflow mechanism, the combination comprising a fixture having respective waste and overflow openings, the said openings being connected by a substantially L-shaped conduit discharging into a suitable outlet, a valve member controlling the flow of fluid through the

said waste opening, adjusting means associated with the said valve member whereby the axial position of the said valve member with relation to the said waste opening may be varied within predetermined limits, rod means within said L-shaped conduit connected operably to said valve member and extending substantially to said overflow opening, the rod means being formed to contact diametrically opposite points of the inside wall of the L-shaped conduit and thereby prevent lateral movement of the said rod means, the said adjusting means comprising interconnected threaded members, one of the said threaded members having operative connection with the said rod and with the said closure member, the second threaded member being threadedly connected to the first threaded member and interposed between the said closure member and the said first threaded member.

3. The combination of a waste and overflow mechanism, a receptacle having waste and overflow openings, a branched conduit associated with said overflow opening and said waste opening, a closure member cooperating with said waste opening, means cooperating with the said closure member whereby the axial position of said valve with relation to the waste opening may be adjusted, a rod member within said branched conduit operatively connected to the said valve and extending substantially to the said overflow opening, the said adjusting means consisting of telescopically related members connecting the said closure member with the said rod member, actuating means cooperating with said overflow opening to lift or lower said rod member.

4. In apparatus of the character described, the combination, with a receptacle having drain and overflow orifices, of a branched outfall conduit associated with said orifices, a valve in axial alignment with said drain orifice and cooperating therewith to regulate the outflow of fluid from the receptacle, adjusting means associated with said valve member whereby the axial position of said valve member may be limitedly varied, the said adjusting means comprising interconnected threaded members, rod means within said conduit removably connected to the said valve and extending in a vertically guided manner within the said conduit to the said overflow orifice, a portion of said rod means providing a guide at a plurality of locations at different levels to inhibit substantial lateral movement within the conduit, adjustable means cooperating with said rod means.

5. In apparatus of the character described, the combination, with a receptacle having drain and overflow orifices, of a substantially L-shaped conduit connecting the said orifices, a valve member having an internally threaded shank cooperating with said drain orifice to regulate the flow of fluid therethrough, means for adjusting the longitudinal position of said valve member with relation to said drain orifice, said adjusting means comprising axially aligned means consisting of a guide link having a threaded adjusting means in the upper portion thereof and the said guide link threaded to the said valve shank, whereby said members are frictionally locked against rotational movement by effecting an abutting contact with the upper portion of the threaded adjusting means, curved rod means within the said L-shaped conduit operably connected to the said valve member, a portion of said rod means positioned within the vertical portion of the said L-

shaped conduit being of serpentine form and in slidable contact with opposite sides of the walls thereof, whereby the said upper rod portion is substantially limited to vertical movement, rotatably actuated lifting means for the said rod means journaled within the said overflow orifice with overthrow means to maintain said valve member in fully open position.

6. In apparatus of the character described, the combination, with a bathtub or the like having waste and overflow openings, of a substantially L-shaped branched conduit associated with the said openings, an adjustably mounted waste valve member regulating the flow of fluid through the said waste opening, adjustment means in axial alignment with the said valve member and cooperating to regulate the axial position thereof with relation to the said waste opening, said adjustment means comprising axially aligned interconnected members, curved rod means within the said L-shaped conduit, the said rod having a serpentine portion within the overflow pipe of said conduit contacting at a plurality of oppositely disposed portions of the inside walls of said overflow pipe whereby transverse motion of the rod is substantially restrained, the said rod means being operably connected to the said valve member for positive opening and closing, and extending backward to said overflow opening, a rotatable stem journaled within said overflow opening and having at the inside end thereof rod-like continuations positioned in such a manner that a pair of lines drawn respectively from the axis of one of the said continuations to the axis of the said stem would be substantially perpendicular to the other, one of said continuations being operably secured to the said rod means, the said stem having actuating means whereby the said continuation which is operably secured to the said rod means may be rotated past a dead-center position to maintain the waste valve in the open position.

7. In apparatus of the character described, the combination, with a fixture such as a bathtub or the like having respective drain and overflow orifices, of a substantially L-shaped conduit cooperating with the said openings, a valve for said drain opening, threaded adjustment means cooperating with the said valve for regulating the position thereof with respect to the said drain opening, L-formed lift rod means within the said L-shaped conduit with the lower portion thereof in positive operative relationship with the said valve member and the upper portion thereof terminating adjacent the said overflow orifice, the portion of said lift rod within the overflow pipe of said L-shaped conduit having a serpentine shape and in slidable contact at a plurality of points with the inside wall of said overflow pipe, whereby the lift rod is movable vertically but not horizontally, an operating stem mounted rotatably within said overflow orifice, said stem having at the inside end thereof off-center, unidirectional continuations functioning respectively as a crank pin and a stop pin, the said crank pin being removably indexed within the upper extremity of the said rod, the said stem having at its outside extremity an operating handle, whereby the said crank pin may be rotated past the dead-center position on the stem whereby upon predetermined rotation the drain valve may be lifted by the said lift rod into a stable open position.

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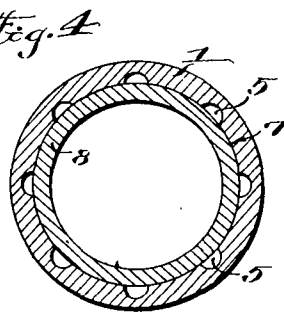
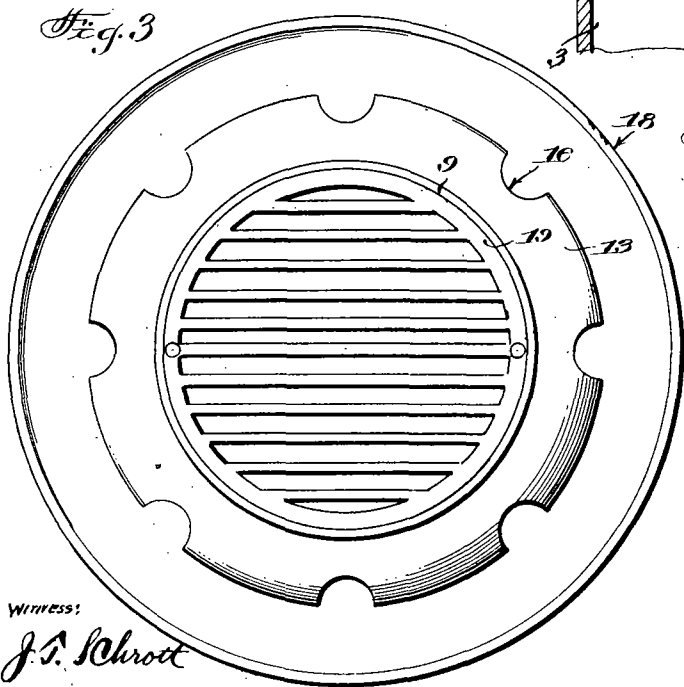
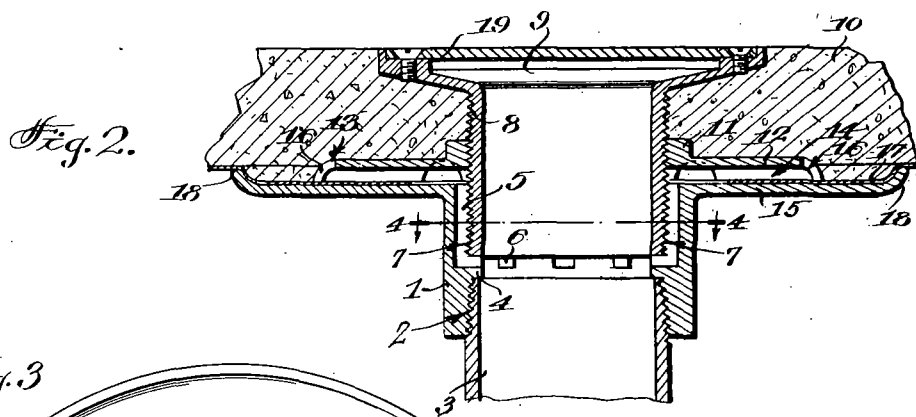
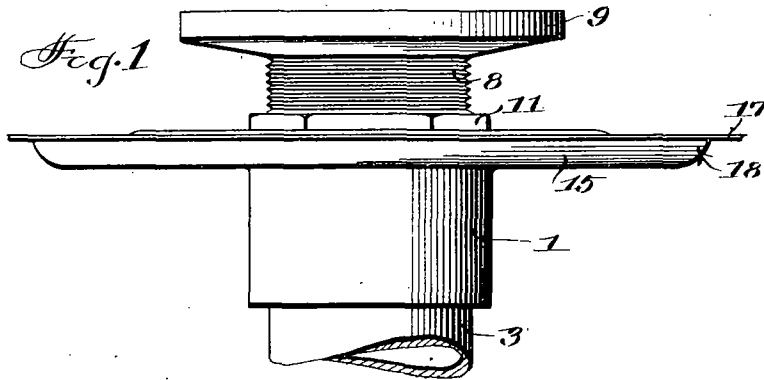
Oct. 20, 1931.

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1,828,601

FLOOR DRAIN

Filed March 18, 1929



WITNESS:
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FLOOR DRAIN

Application filed March 18, 1929. Serial No. 347,956.

This invention relates to improvements in plumbing fixtures, a particular purpose being to provide a floor drain so designed that seepage will effectively be disposed of to which end it consists of the constructions, combinations and arrangements herein described and claimed.

An object of the invention is to provide the body of a drain with seepage channels which at one end have communication with the drain pipe and at the other end are open to points outside of certain fittings that are used in the installation of the drain, so that water percolating around such fittings will find its way into the drain pipe.

A further and important object of the invention is to employ a clamp for the double purposes of securing a water-proofing material such as tarred paper to the flange of the strainer body and guarding the seepage channels in said body so that the latter cannot become obstructed when the drain is embedded in a plastic mass.

Other objects and advantages will appear in the following specification, reference being had to the accompanying drawings in which

Figure 1 is a side elevation of the improved floor drain, a portion of a drain pipe being shown connected therewith,

Figure 2 is a vertical section showing the drain installed in a floor,

Figure 3 is a plan view of the drain,

Figure 4 is a cross section taken on the line 4-4 of Figure 2.

As indicated in one of the brief statements of the objects of the invention, the principle of the latter is to allow for the seepage of moisture into a drain pipe from points outside of certain fittings which are used in the installation of the drain. This purpose may be accomplished in drains other than those used in floors, and the embodiment of the outstanding features in a floor drain is not to be regarded as a limitation.

In the drawings the body 1 is internally threaded at 2 at the lower end to receive the drain pipe 3. The end of the drain pipe abuts an annular shoulder 4 which prevents the closure of one or more seepage channels 5

which have outlets 6 in the circumferential face of the shoulder. Were the shoulder not provided there would be the grave possibility of the body 1 being screwed down so far upon the drain pipe as to obstruct the outlets 6.

The channels 5 are formed in a second internally threaded bore 7, this at the other side of the shoulder 4, into which bore the nipple 8 of an inlet or receiver 9 is screwed until it too abuts the annular shoulder 4. The nipple 8 is not necessarily screwed down that far. Varying thicknesses of the plastic floor 10 will determine the extent to which the nipple 8 is screwed in, but the minimum floor thickness would be that at which the nipple is screwed down to the limit.

It is observed that the external threads on the nipple 8 extend throughout its length. This is to receive the internally threaded wrench head 11 of the clamp 12. The clamp is preferably round but not necessarily so. The peripheral edge is curled down at 13 thus defining a seepage chamber 14 when the clamp is screwed down upon the flange 15 of the drain body 1.

Openings 16 in the curled edge 13 admit any moisture to the chamber 14 that may percolate either through the floor 10 or around the fittings of the drain to a sheet 17 of water-proofing material. The peripheral edge of the flange 15 is curled up at 18, giving the flange the appearance of a dish. The water-proofing material, whether that be tarred paper, sheet lead or the like, laps into the dish far enough to permit the clamp 12 to be screwed thereupon to make a tight connection.

Inasmuch as the seepage channels 5 extend up to the top surface of the flange 15, it follows that they communicate with the chamber 14. Any moisture that may percolate through the floor to the sheet of water-proofing 17 will ultimately find its way into the dish 18, chamber 14 and the channels 5 whence it will run off into the drain pipe 3.

A slotted cover 19 is secured to the receiver 9. This is flush with the floor 10. Upon installing the drain, the body 1 is fixed in position upon the drain pipe 3 and the water-

proofing sheet 17 laid over all adjoining supporting structure of the floor and made to lap over the flange 15. The nipple 8 with its clamp 12 is screwed in place in the bore 7.

The clamp 12 is then screwed down until it firmly binds against the sheet 17. It is an outstanding purpose of the invention to provide and utilize the clamp 12 for the securing of the sheet 17. This must be fixed in place around the drain; and it must be clamped down so hard that water cannot back up under it. The second major purpose of the clamp 12 is to guard the seepage channels 5.

These must not be obstructed. The plastic material of which the floor 10 is either composed or which enters the construction of the floor will be packed around the drain fittings as illustrated in Fig. 2. The dished clamp 12 will prevent the packing from reaching the channels 5 and will establish the chamber 14 into which the moisture will seep prior to entering the channels.

Fundamentally, therefore, the improved drain provides a through passage for the drain water, the former being represented by the nipple 8 and drain pipe 3, which passage has one or more external channels that afford communication thereof from points outside of the drain fittings.

I claim:—

1. A drain comprising a hollow body with interiorly threaded end portions confronting a shoulder formed with an outlet communicating with a seepage channel formed in one of the threaded portions, a flange on the body having a curled up peripheral edge defining a dish into which a sheet of water-proofing material is to be lapped, a drain receiver having a nipple with a full-length thread screwed upon one of the threaded ends and defining a side closure for the channel, and a clamp screwed upon the threads of the nipple, being peripherally curled down to bind upon said sheet of material and define a seepage chamber with which the channel has communication and having an opening for the admission of seepage to said chamber.

2. In a drain, a body portion having a bore therethrough, a shoulder projecting inwardly from said bore substantially at the center thereof, threads for connection to a drain pipe below said shoulder, threads for the reception of a nipple positioned above said shoulder, a nipple threaded throughout its length for engagement with said upper threads and said shoulder, seepage passages formed in said upper bore between said nipple and said body portion, outlets for said seepage passages in said shoulder, a dish-shaped flange positioned at the upper end of said body portion, waterproofing material positioned in said flange and an inverted dish-shaped flange mounted on said nipple and having apertured turned down edges

for clamping said waterproofing material in position and defining seepage chambers in cooperation with said dish-shaped flange for communication with said seepage passages.

3. In a drain, a body having an internally threaded bore formed with a seepage channel, an annular shoulder projecting into the bore and formed with a fluid outlet in communication with the channel.

RICHARD T. FRYE.

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Kasschau

No. 645,749.

Patented Mar. 20, 1900.

H. C. G. KASSCHAU.

VALVE FOR SINKS OR STATIONARY WASHSTANDS.

(Application filed Sept. 21, 1899.)

(No Model.)

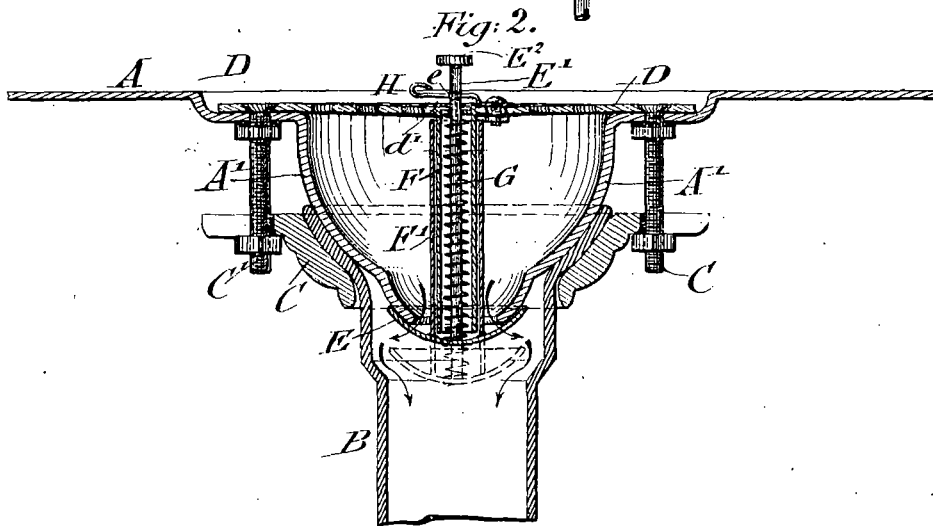
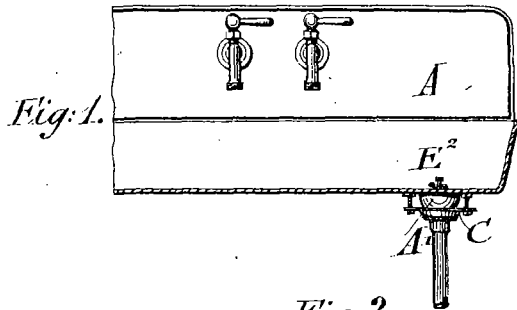
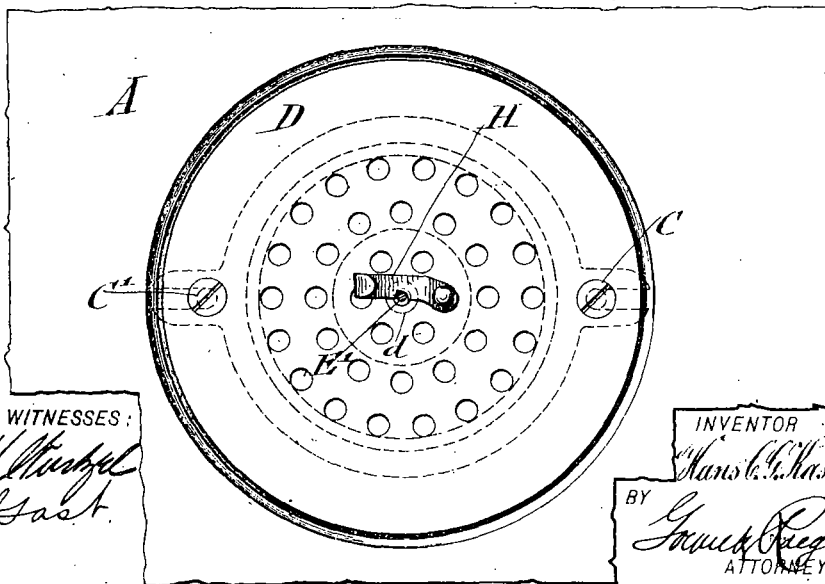


Fig. 3.



WITNESSES:
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INVENTOR
Hans C. G. Kasschau
BY
James P. Rogers
ATTORNEYS

UNITED STATES PATENT OFFICE.

HANS C. G. KASSCHAU, OF NEW ROCHELLE, NEW YORK.

VALVE FOR SINKS OR STATIONARY WASHSTANDS.

SPECIFICATION forming part of Letters Patent No. 645,749, dated March 20, 1900.

Application filed September 21, 1899. Serial No. 731,158. (No model.)

To all whom it may concern:

Be it known that I, HANS C. G. KASSCHAU, a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Valves for Sinks or Stationary Washstands, of which the following is a specification.

This invention relates to a valve for sinks or stationary washstands; and the object of the same is to provide sinks and the like with an automatic valve which is adapted to be secured in raised or lowered position when the sink is to be cleaned out thoroughly or when the waste-pipe is to be flushed.

A further object is to protect the closing-spring so that it will not be injured or damaged by the accumulation of waste matter, which would result in the improper working of the valve.

The invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed.

In the accompanying drawings, Figure 1 is a sectional front view of a sink provided with my improved valve. Fig. 2 is an enlarged sectional view of the valve in connection with the outlet portion of a sink or stationary washstand, the valve being shown closed in full lines and opened in dotted lines; and Fig. 3 is a plan view of the same, the valve-stem being sectioned.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A indicates a sink or washbasin of a stationary washstand provided with the bowl-shaped outlet portion A', to which is attached the lead waste-pipe B by means of the supporting-collar C and screw-bolts C', all as usual. D indicates the strainer, which is secured by said screw-bolts.

E indicates the valve, which is provided with a valve-stem E', having a knob or button E² at its upper end. The valve is supported from the strainer D by means of a metallic tube F, which is screw-threaded at its upper end, so as to screw into a threaded central opening d in the strainer, while a helical spring G, which is coiled around the valve-stem E', is fixed at its upper end to the closed upper end of the tube F and at its lower end to the valve E. The upper or knob end of the

valve-stem projects through the tube F and above the strainer, while the lower end of the valve-stem carries the said valve E. Said valve is of cup shape or dished, so as to conform to the convex outlet portion A' and to act more freely under the weight of the water. Brazed or otherwise secured to the valve is an upwardly-projecting tube F', which is larger than the tube F and telescopes over the same, so as to fully inclose and protect the closing-spring G in all positions of the valve.

At a point just above the strainer D the valve-stem E' is notched at e, so as to be engaged by a catch H pivoted to the strainer, whereby the valve is held in raised or closed position. The valve is held in open position by disengaging the said catch from the notched portion e of the valve-stem, depressing the latter, and engaging the catch over the knob or button E².

The valve opens and closes automatically when the catch is in disengaged position, the weight and force of the water flowing off opening it and the spring closing it.

If it be desired to hold the valve closed against the action of the water, the catch H is engaged with the notched portion e of the valve-stem. The sink or basin can then be partly filled with water and thoroughly scrubbed and cleaned, or the retained water may be used for some other purpose. When the catch is disengaged, the valve opens automatically and the water flows off through the waste-pipe.

Should it be desired to hold the valve down or in open position, the knob is pressed down and the catch engaged over it. The water can then run off freely without any interruption by the valve, which should be the case when a thorough cleaning or flushing of the parts is desired.

My improved valve is simple and reliable and not liable to get out of order, but if it does it can be readily repaired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a sink or basin provided with an outlet portion, of a fixed tube, a valve seating against the outlet portion, and provided with a valve-stem, a spring coiled around the valve-stem inside of said

tube and acting to close said valve, and another tube, fixed to the valve and telescoping with the other tube, substantially as set forth.

2. The combination, with a sink or basin
5 provided with an outlet portion, of an upwardly-seating automatic valve provided with a valve-stem projecting upwardly above the outlet portion, and a pivoted catch, said valve-stem being constructed to be engaged below
10 its upper end by the said catch, for locking the valve in closed position and to be engaged

over its upper end by the said catch, for locking the valve-stem in open position, substantially as set forth.

In testimony that I claim the foregoing as
my invention I have signed my name in presence of two subscribing witnesses.

HANS C. G. KASSCHAU.

Witnesses:

PAUL GOEPEL,
M. H. WURTZEL.

984.259

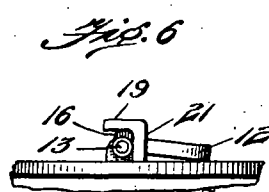
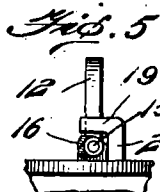
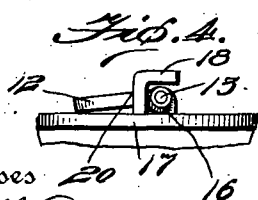
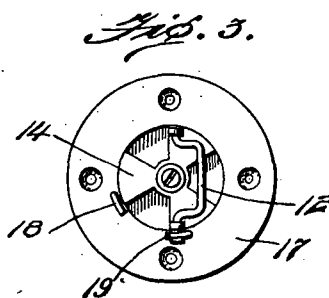
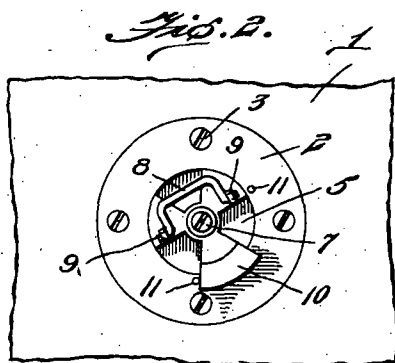
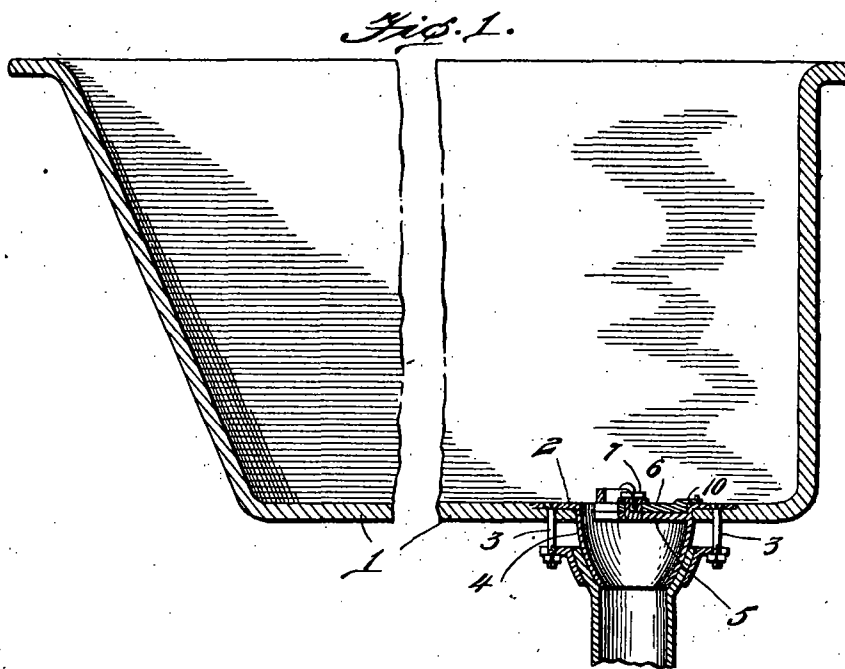
Beck

A. BECK.
WASTE PLUG.

APPLICATION FILED APR. 4, 1910.

984,259.

Patented Feb. 14, 1911.



Witnesses
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UNITED STATES PATENT OFFICE.

ADOLF BECK, OF NEW YORK, N. Y.

WASTE-PLUG.

984,259.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed April 4, 1910. Serial No. 553,455.

To all whom it may concern:

Be it known that I, ADOLF BECK, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Waste-Plugs, of which the following is a specification.

My invention relates to improvements in waste-plugs, and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide an inexpensive and durable waste-plug constructed to minimize the liability of accidental interference and shifting thereof.

A further object of my invention is to provide an improved waste-plug in which the valve, or closure, can be locked and clamped tightly on its seat in the open and closed positions.

A further object of my invention is to provide an improved waste-plug which constitutes an efficient strainer, and is adapted for advantageous use with stationary tubs, bowls and various forms of vessels.

In the accompanying drawings, forming a part of this application and in which similar reference symbols indicate corresponding parts in the several views: Figure 1 is a vertical section of a stationary tub provided with one embodiment of my invention; Fig. 2 is a plan view of the waste-plug shown in Fig. 1; Fig. 3 is a plan view, illustrating a modified construction, and Figs. 4, 5 and 6 are enlarged detail elevations, illustrating the clamping means of Fig. 3 shifted in its several positions.

Referring to the drawings, 1 indicates a stationary tub provided with the usual discharge orifice. An annular plate 2 of my improved waste-plug is provided with openings for receiving attaching screws 3, and carries a pendant nipple 4 for extending through the discharge orifice. An apertured valve seat 5 extends across the nipple 4, and rotatably supports a shutter valve 6 flush with the upper surface of the attaching plate 2; said apertured seat constituting an efficient strainer for the waste outlet. The valve 6 is provided with a central hub rotatably secured on a boss on its seat in any

suitable manner, as by a confining screw 7. A bail 8 is pivoted in ears 9 on the valve, for swinging flat against the latter, thereby minimizing danger of accidentally shifting said valve through blows or interference. The valve is provided with a wing 10 slidably engaging the attaching plate 2 between two pins 11, which latter constitute stops for limiting the swing of said valve in its open and closed positions.

Figs. 3-6 illustrate a slight modification, in which a bail 12 is pivoted at 13 on the valve 14; one of said pivots 13 carrying a cam 16 in position for clampingly engaging the attaching plate 17 or off-sets 18 and 19 on stops 20 and 21 extending from said plate.

Fig. 4 shows the bail 12 swung to the left from its vertical position, thereby bringing the cam 16 into clamping engagement with the attaching plate 17 for locking the valve against shifting. Fig. 5 shows the bail 12 raised to vertical position, for swinging the cam 16 to its inoperative position to permit free shifting of the valve. Fig. 6 shows the bail 12 swung to the right from its vertical position, thereby bringing the cam 16 into engagement with the off-set 19 of the stop 21 for clamping the valve tightly on its seat; this securely holds the valve against accidental shifting, and prevents all danger of leakage through wear of the valve or seat.

I have illustrated preferred and satisfactory constructions, but changes could be made within the scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a waste-plug, the combination of an attaching plate, an apertured valve seat thereon, a valve rotatably mounted on said seat, clamping means carried by said valve and overlapping said plate for engaging the latter, and stops on said plate in the path of said clamping means, substantially as described.

2. In a waste-plug, the combination of an attaching plate, an apertured valve seat thereon, a valve rotatably mounted on said seat, a bail pivoted on said valve, a cam on the pivot of said bail overlapping said plate

for clampingly engaging the latter, and stops on said plate in the path of said cam, substantially as described.

3. In a waste-plug, the combination of an
5 attaching plate, an apertured valve seat thereon, a valve rotatably mounted on said seat, a bail pivoted on said valve, a cam on the pivot of said bail, stops on said plate in the path of said cam, and offsets on said

stops, said cam extending in position for 10 clampingly engaging either said plate or said offsets, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLF BECK.

Witnesses:

GEORGE SHERMAN RICHARDS,
RAY S. KNORR.